EXCAVATIONS AT BHARADVĀJA ĀŚRAMA 1978-79 & 1982-83

(With a Note on the Exploration at Chitrakūṭa)

B.B. LAL

MEMOIRS OF THE
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EXCAVATIONS
AT
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Foreword

A national project entitled "**Archaeology of the Rāmāyaṇa Sites**" was inaugurated at Ayodhyā in 1975 by Professor S. Nurul Hasan the then Minister of State of Education and Culture. Under the project five sites viz. Ayodhyā, Śṛiṅgaverapura, Bharadvāja Āśrama, Chitrakūṭa and Nandigrāma were undertaken for excavation/exploration. Bharadvāja Āśrama is one of the key sites associated with Rāmāyaṇa story; Rāma, Sītā and Lakṣmaṇa, halted for a night to pay their homage to sage Bharadvāja, before proceeding further south.

The Excavations in two field seasons i.e. 1978-79 and 1982-83 at Bharadvāja Āśrama, Distt. Allahabad, U.P. and exploration in 1981 at Chitrakūṭa, Distt. Bāndā, U.P., were jointly carried out under the direction of Professor Lal on behalf of Indian Institute of Advanced Study, Shimla and Shri K.N. Dikshit of the Excavation Branch-II of Archaeological Survey of India. The excavations have revealed two distinctive Periods of occupation at Bharadvāja Āśrama, in which Period I was characterized by early NBPW while Period II as Gupta Period. The exploration at Chitrakūṭa also presents a close association with early NBPW culture which was possibly associated with Rāmāyaṇa story.

The mandatory reports on these excavations were published in **Indian Archaeology A Review** of the concerned years and one comprehensive report on **Excavations at Śṛiṅgaverapura, Vol. I** on Tank, in MASI 88 of 1993. Now, I feel great pleasure while presenting another comprehensive report before scholars, on the **Excavations at Bharadvāja Āśrama, with a note on the Exploration at Chitrakūṭa,** prepared by Professor Lal.

I am sure the reader would find the report most useful and interesting because of its significant contents namely the structures, pottery, antiquites, scientific analysis of metal samples and especially the analysis of data showing the importance of oral traditions through local ballads. I am thankful to Prof. Lal for producing such scholarly report and completing this task, which throws light on material culture of Early Historical Period as well as Historical Period, within a stipulated period of time.

I would like to place on record my appreciation of my colleagues in the Archaeological Survey of India for their co-operation in bringing out this publication. My special

thanks are due to Dr. B.R. Mani, Addl. Director General, Dr. P.K. Trivedi, Director, Dr. Arundhati Banerji, Superintending Archaeologist, Shri Hoshiar Singh, Production Officer, Dr. Piyush Bhatt and Dr. Vinay Kumar Gupta, Assistant Archaeologists of the Publication Section who have been working on this report with unflagging zeal and enthusiasm. M/s Chandu Press deserves thanks for publishing this volume.

New Delhi
June 13, 2011

(Gautam Sen Gupta)
Director General
Archaeological Survey of India

Preface

I am sure the reader would like to know – in fact, he/she has every right to ask: Why is this Report on the excavations at Bharadvāja Āśrama and exploration at Chitrakūṭa being published in 2011 whereas the field-work was carried out at the former site as far back as 1978 and 1983, and that at the latter in 1981? The sordid story, in brief, is as follows.

A project called 'Archaeology of the Rāmāyaṇa Sites' was taken up jointly by the Archaeological Survey of India and the Indian Institute of Advanced Study, Shimla, under my overall direction in 1975 and continued up to 1986. Under it three key-sites associated with the Rāmāyaṇa story, viz. Ayodhyā, Śṛiṅgaverapura and Bharadvāja Āśrama, were excavated, while minor trenching was done at Rahet (believed, according to local tradition, to be ancient Nandigrāma) and surface-exploration was carried out at Chitrakūṭa.

An extensive report, accompanied by a large number of illustrations, on the unique water-supply tank discovered at Śṛiṅgaverapura was prepared in 1991. It saw the light of the day in 1993. In its Preface, I had expressed a hope in these words: **"The volume on Bharadvāja Āśrama may be press-ready by the end of 1992. If all goes well, it is hoped that the remaining volumes in the series will be out by the time the country celebrates the Golden Jubilee of its Independence in August 1997."**

But instead of 'all goes well', everything went wrong. The logistic support provided to me for the writing of the report on the Śṛiṅgaverapura was withdrawn by the Survey and I was left high and dry. I kept on writing letter after letter to each successive Director General for over fifteen long years but all these – I am sorry to say – fell on deaf ears. There wasn't even an acknowledgment.

With each new Director General taking over the reins of the Survey I used to make a fresh attempt, in the hope that the gods may be pleased. Thus, on October 10, 2007, I wrote the following to the Ms Anshu Vaish:

> I am extremely sorry to be bothering you about my writing out the Report on the Excavations at Ayodhyā – an issue that does not seem to have been taken seriously by your predecessors for the **past 15 years**. Just to give you an idea of how things have been dragging on, I enclose herewith copies of three of my latest letters, as follows:

1. Letter dated June 15, 2004, addressed to Shri R. C. Misra, the then ADG,
2. Letter dated April 4, 2006, addressed to Shri Babu Rajeev, the then DGA, and
3. Letter dated May 2, 2007, addressed to Shri Babu Rajeev, the then DGA.

May I request you kindly to issue necessary orders at your end, as enunciated vide my letter dated April 4, 2006, so that the work may be started by me as early as possible?

Also, please have a look at my letter dated May 2, 2007. Thus, in case I do not get a positive reply from you by the end of November, 2007, I will have no option but to conclude that the Survey is no longer interested in my writing out the Ayodhya Report; and I will treat the matter as closed.

Thanking you and with the best of regards,

I have indeed no words to thank Ms Vaish who saw things through and provided the necessary logistic support to me. However, for some curious reason, I have been asked to take up the report on Bharadvāja Āśrama and Chitrakūṭa, instead of Ayodhyā as mentioned in my above-noted letter. Anyway, may it be hoped that Ayodhyā's turn will also come one day.

In the context of the clearing up of the arrears of reports in general, there is one more aspect which deserves to be taken note of. Inordinate delay in making arrangements for report-writing invariably has certain adverse effects. This is particularly so in respect of the safe storage of the excavated material and of the drawings and other records. White ants often have their day. In such circumstances, the report-writer can do no better than to make the most of whatever is available to him. The situation has been no different in the case of Bharadvāja Āśrama. Anyway, I have tried to make the best of the situation and am presenting as comprehensive a report as possible under the given circumstances.

At the end of this Report there is also a short Note on the exploration carried out at Chitrakūṭa, one of the sites included in the 'Archaeology of the Rāmāyaṇa Sites Project'.

February 28, 2011

B.B. Lal

Acknowledgements

The excavations at Bharadvāja Āśrama, constituting a part of the project, 'Archaeology of the Rāmāyaṇa Sites', was undertaken jointly by the Archaeological Survey of India and the Indian Institute of Advanced Study, Shimla, under my overall direction. On behalf of the Survey, its Excavations Branch, of which Shri K.N. Dikshit was the Superintending Archaeologist, participated in the work. Shri Dikshit very generously provided all the necessary funds and logistic support.

To the actual field-work many hands have contributed. Thus, mention must be made of Sarvashri P.K. Trivedi, B.R. Meena and Syed Jamal Hasan who assisted me in supervising the dig. The contour map of the site was made by Shri Lal Singh, while the plans of the structures and profiles of the sections were drawn by Shri S.K. Sharma. He has also designed the cover-page. Shri K.K. Sharma, who has been holding charge of the excavated material and all the documents, very kindly came on tour from Agra where he was posted to make the material available for the report-writing. Photography at the time of the excavation was done by Shri Birbal Sharma and Shri K.K. Grover, while for inclusion in the report the photographs have been prepared by Shri B.R. Rajput, Shri Ravindra Kumar and Shri Subhash Chand. The drawings of pottery and antiquities have been made by Shri V.P. Verma and Smt. Priti Shandilya. Under my guidance the chapters on the pottery, metal objects and other finds have been written by Shri Vishnu Kant. The Report on Scientific Examination of metal samples from the site has been prepared by a team of officers of the Science Branch of the Survey, under the guidance of its Director, Dr. K.S. Rana. Smt. Anjali Negi neatly typed out the entire manuscript, charts and tables with great care and made it press-ready on the computer.

To all the persons mentioned above my grateful thanks are due.

Contents

List of Illustrations

A. FIGURES

Chapter I : Introduction

Chapter II : The Site and its Environment

Chapter IV : The Trenches

Chapter V : The Pottery

Chapter VIII : Metal Objects

Chapter IX : Other Finds

Chapter XI : A report on Scientific Examination of Metal Samples

Chapter XII : Exploration at Chitrakūṭa

B. PLATES

Chapter II : The Site and its Environment

Chapter III : The Stratigraphy and Chronology of the Site

Chapter IV : The Trenches

Chapter V : The Pottery

Chapter VI : Terracotta Figurines

Chapter VII : Terracotta Stamps and Dabbers

Chapter VIII : Metal Objects

Chapter IX : Other Finds

Chapter XI : A report on Scientific Examination of Metal Samples

Chapter XII : Exploration at Chitrakūṭa

Introduction

Chapter

I

Some sixty years ago when India got her Independence, two major lacunae stared in the face of Indian archaeologists: one was generated as a result of the Partition of the country and the other was due to scanty attention having been paid by Indian archaeologists themselves to the problem concerned, as indicated below.

To state briefly, the Partition took away all the sites of the well known Harappan Civilization to Pakistan, leaving hardly any within the Indian border. Indian archaeologists, however, took up the challenge; and one is pleased to state that today we have more sites of this civilization than has Pakistan. Further, it is not merely the number that matters. The Indian sites, such as Kalibangan, Banawali, Rakhigarhi, Kunal, Bhirrana, Farmana, Lothal, Surkotada and Dholavira, have added many new dimensions to our knowledge of this mighty civilization.

The other problem related to the yawning gap in our knowledge of ancient Indian history between the end of the Harappan Civilization (also known as the Indus or Indus-Sarasvatī Civilization) which, in its Mature Stage, ranged in date from circa 2600 to 2000 BCE and the period of the *Ṣoḍaśa Mahājanapada*s (Sixteen Big States) beginning around the sixth century BCE. Archaeologically, very little was known about this intermediary period and thus it was loosely termed as the 'Dark Age', although there was nothing 'dark' about it. It was indeed the next big challenge for Indian archaeologists.

As Superintending Archaeologist in charge of the Excavations Branch of the Archaeological Survey of India, in late 1940s and early 1950s, I was privileged to accept this challenge. I lost no time and began exploring some ancient sites in western

Uttar Pradesh, which had so far received scanty attention. At many of these sites I found a distinctive pottery, grey in color and painted in black pigment with a variety of geometric, linear and curvilinear designs. It was given a proper name, the Painted Grey Ware (PGW). In the exposed vertical sections of the mounds concerned it was also observed that this ware lay in almost the lowest levels, much below the material known to belong to the 6th-5th centuries BCE. Summarizing my discoveries, I published in 1950 a paper captioned 'The Painted Grey Ware of the Upper Gangetic Basin: An Approach to the Problems of the Dark Age', in *Journal of Royal Asiatic Society, Bengal (Letters)*, Vol. 26, pp. 89-102.

Since many of the sites that yielded this particular kind of pottery were associated with the Mahābhārata story, I decided to undertake excavation at Hastināpura, which was the capital of the Kauravas. Over there is a large mound, located on the right bank of the Gaṅgā in Meerut District of Uttar Pradesh. Without going into details, it is relevant to state that the excavations revealed that a sizeable portion of the Painted Grey Ware settlement was washed away by a heavy flood in the Gaṅgā. Further, a part of the washed-away material, including a few sherds of the PGW were also encountered in nearly 15-meter-deep bore-holes in the adjacent bed of the river. A comparison of this archaeological evidence, with that from literature was highly telling. The relevant part of the text runs as follows:

Gaṅgayāpahṛite tasmin nagare Nāgasāhvaye
Tyaktvā Nichakṣur nagaram Kauśāmbyām sa nivatsyati

After the washing away of the site of Hastināpura by the Gaṅgā, (the then ruler) Nichakṣu will abandon it and move (the capital) to Kauśāmbī.

Archaeologically, what is no less exciting is that the lowest levels of Kauśāmbī began with the same kind of material culture as was there in existence at Hastināpura at the time when the flood destroyed it. The texts further mention the names of the rulers of Kauśāmbī, according to which Udayana was twenty-fifth from Nichakṣu. It is well known that Udayana was a contemporary of Buddha, whose commonly accepted date is 565-487 BCE. In other

words, Udayana may have been ruling around 500 BCE. Though the average reign per ruler has been a matter of debate, an estimate worked out on the basis of known dynasties of ancient and mediaeval India places the average in round figures at 15 years. Thus, the approximate date of Nichakṣu would be around 875 BCE. Further, since, according to the same texts, Nichakṣu was the fifth ruler of Hastināpura, after the Mahābhārata war, the war may broadly be placed in the 10th century BCE. Anyway, leaving aside for a while the exact date of the Mahābhārata war, the more important point to remember is that literary and archaeological evidences have both converged to establish the historicity of the basic truth of the *Mahābhārata*, though clearly it is nobody's claim that each and every detail mentioned therein is archaeologically verifiable. Further, let it not be forgotten that the *Mahābhārata* is a *prabandha-kāvya* (an epic) in the writing of which the poet enjoyed full freedom of imagination.

The reader will kindly forgive me for this seemingly unwanted and long introduction. But I thought it was necessary to let the reader know how, encouraged by the results (though by no means immense) of my excavations at Hastināpura, I embarked upon my next project, namely 'Archaeology of the Rāmāyaṇa Sites'. Though conceived while in the Survey, I could not undertake it since as the Director General almost all my time was taken up by administrative and other allied matters. It was only after my voluntary retirement from the Survey in 1972 that I could plan to take up this project – to begin with at the Jiwaji University, Gwalior, and later with full attention at the Indian Institute of Advanced Study at Shimla. The Survey helped me in the field-work which ran from 1977 to 1986, by deputing the staff of its Excavations Branch which, for most of the time, was headed by Shri K.N. Dikshit.

Under this project, five sites were taken up for investigation: (i) Ayodhyā, the capital of the Kosala kingdom, from where Rāma hailed; (ii) Śṛiṅgaverapura, where Rāma, Sītā and Lakṣmaṇa crossed the Gaṅgā in the first lap of their exile; (iii) Bharadvāja Āśrama, where the trio stayed overnight to pay their homage to sage Bharadvāja; (iv) Chitrakūṭa, where they stayed for quite some time before proceeding southwards; and (v) Nandigrāma from where Bharata carried on the governmental affairs in the absence of Rāma (cf. the map, Fig. 1).

SITES ASSOCIATED WITH RĀMĀYAṆA STORY
RĀMĀYAṆA SITES
MODERN TOWNS
LUCKNOW
FAIZĀBĀD
AYODHYĀ
NANDIGRĀMA
GORAKHPUR
KĀNPUR
R. RAPTĪ
R. SARAYŪ
R. TONS
R. GOMTĪ
R. SAI
R. GAṄGĀ
R. YAMUNĀ
R. BETWĀ
BALLIĀ
ŚṚṄGAVERAPURA
GHĀZĪPUR
BĀNDĀ
ALLAHĀBĀD
BHARADVĀJA ĀŚRAMA
VĀRĀṆASĪ
CHITRAKŪṬA
N
50 30 10 0 20 40 60 80 100 km.
DELHI
AREA OF MAP

Fig. 1

Located on the right bank of the Sarayū, in District Faizabad, Uttar Pradesh, Ayodhyā has a fairly large mound, covering an area of about a square kilometer and rising at places to a height of 10 meters. Excavations were carried out at fourteen spots, located in different parts of the site, in order to ensure that the lowest levels were not missed in case these existed in some areas and not in others. These included certain well known localities like the Janma-Bhūmi, Hanumāna-garhī, Kauśilyā Ghāṭa, Nala-kā-Tīlā, etc.

The excavations revealed that the settlement at Ayodhyā began with a phase when a very distinctive and deluxe pottery called the Northern Black Polished Ware (NBPW) had come into being. It is a highly shining ware with surface-colour varying from jet black, indigo and silvery to golden. The shapes too are the ones that predominate in the early stage of the ware, such as convex-sided dishes and bowls with corrugated profile. Tools of iron, besides those of copper, also characterized the NBPW levels. In due course of time, weights of fine-grained stones made their appearance, as did a system of coinage. The NBPW-period weights are cylindrical, in marked contrast to those of the Harappan Civilization, which are cubical. The coins were the earliest to be produced in the country. These were made of silver or copper and bore on their surface punched marks.

The site, with shifts from one area to another, continued under occupation almost all through. Even today it is a small township, dotted with temples and bustling with pilgrims.

When did the earliest occupation at Ayodhyā begin? The charcoal samples collected by me were from the upper NBPW levels and these gave a date-range from the 6th to 3rd centuries BCE. But the lower levels still remained to be properly dated. This very important lacuna has since been filled up by putting to test the charcoal samples collected from the lower NBPW levels by the Archaeological Survey during its renewed excavations (2002-03) in the Janma-Bhūmi area (short-named AYD-1). The dating

was done by the laboratory of the Birbal Sahni Institute of Palaeobotany, Lucknow. The relevant details of their findings, as quoted by S.C. Saran, are as follows:*

Field-sample No., Layer No. and depth in meters	B. S. lab. No.	Age of sample, based on half-life 5570+/– 30 yrs	Calibrated Range in BCE
No. 1A, AYD-1	2126	2730+/– 80 BP (780 BCE)	970-810 BCE
No. 7, AYD-1, G-7 Layer 16, 9.15m	2152	2830+/– 100 BP (880 BCE)	1190-840 BCE
No. 8, AYD-1, G-7, Layer 19, 11m	2153	2860+/– 100 BP (910 BCE)	1210-900 BCE
No. 9, AYD-1, G-7 Layer 20, 11.53m	2154	3200+/– 130 BP (1250 BCE)	1680-1320 BCE

I do not know if the sample bearing BS No. 2154 comes from the lowest level. In any case, the above-mentioned C-14 dates indicate that the lower levels of the NBPW at Ayodhyā do go back to a period well before 1000 BCE.

The results of the excavations at Bharadvāja Āśrama, to be presented in the following pages, will have to be assessed in the light of the foregoing evidence from Ayodhyā, the key-site in the Rāmāyaṇa story.

* Saran, S.C. 2006. The Northern Black Polished Ware – Origin, Development, Historicity, Dating and the Ethnic Relationship in the Middle Ganga Plain, in B.R. Mani and S.C. Saran (eds.), *Purābhāratī: Studies in Early Historical Archaeology and Buddhism*, pp. 18-31, Delhi: Sharada Publishing House.

The Site And Its Environment

Chapter II

The campus of the University of Allahabad is an important landmark in the city and no one can miss it. On its eastern side there runs a road which leads southwards to Tagore Town and George Town complexes. However, a bit before reaching these complexes one sees on the right a locality known as Colonelganj. An area lying contiguously to the south of Colonelganj and on the right side of this road is believed to be the site of ancient Bharadvāja Āśrama (Lat. 25° 27′ 27″ N.; Long. 81° 51′ 34″ E; see Fig. 2 and Pl. I). As if to testify to this belief, there stands, in the north-western part of this area, a temple is dedicated to sage Bharadvāja.

Two very significant features mark out this site. One, there is no mound such as one comes across at other ancient sites, e.g. Ayodhyā or Śṛiṅgaverapura. In the case of Bharadvāja Āśrama the area is brazenly flat (Pl. III). As would be seen from Fig. 2, contour 92 m. above Mean Sea Level (MSL) covers most of the area, though the contours begin to rise gently as one moves westwards. Contour 94 m is limited to the north-western part whereabouts the temple is located. In fact, the flat nature of the land is discernable even when one enters the Colonelganj locality.

The other striking feature is that there is a sudden drop in the level of the land to the south of the site. The contours fall sharply from 92 m to 87 m. It is said that in not too distant past the water of the Gaṅgā river, when it was in spate, used to rush up to the lower levels where George Town is now located. This has since been avoided by putting up a sufficiently high bund on the bank of the river. All this – viz. the sudden drop by 5 meters in the contours of the site and the flooding of the area at the lower levels– suggests

SITE PLAN OF BHARADVĀJA ĀŚRAMA AREA
ALLAHABAD, U.P.1978-79&1982-83
BHARADVĀJA MUNI TEMPLE
TEMPLE COMPLEX
ALB-2
WELL
KALI TEMPLE
ALB-5
DURGA TEMPLE
ANAND BHAWAN
ALB-4
PUMP HOUSE
BARADARI
TANK (1979)
WATER TANK
PUMP HOUSE
ALB-3
ALB-1
ALB-6
ST. ANTHONY CONVENT, INTER COLLEGE
MOTILAL NEHRU ROAD
VIKALANGA KENDRA
KAMLA NEHRU ROAD
NEHRU MARKET
PLATFORM
PATH
MAHARISHI DAYANAND ROAD
JAWAHARLAL NEHRU ROAD
PARK
PARK
N
MODERN STRUCURES
TEMPLES
EXCAVATED AREA
CONTOURS IN METERS
Scale of
Meters
L.S.MAMANI
SKS

Fig. 2

SATELLITE IMAGE OF BHARADVĀJA ĀŚRAMA AREA, ALLAHABAD, U.P.
N
Kamla Nehru Hospital
ANAND BHAWAN
TEMPLE
ALB-5
ALB-2
ALB-4
ALB-3
ALB-6
0
80
160
25°27'26.08"N
81°51'33.08"E
SKS

Pl. I

that in ancient times the river may have flown past Bharadvāja Āśrama. The Gaṅgā is well known for having shifted its course at a number of places, for example at Hastināpura, where the ancient course is indicated by a very thin channel known as *Būḍhī Gaṅgā* (Old Gaṅgā)– the present main course having shifted quite a way off to the east.

As just stated, all ancient sites tend to grow into mounds because of the successive occupational deposits on them. Thus, these are easily identifiable. But this is not the case with Bharadvāja Āśrama. Nobody would have ever imagined that this flat piece of land, over which Allahabad Municipality has now laid out a lawn, conceals ancient occupational strata. However, I argued within myself that if the local tradition about it having been the site of ancient Bharadvāja Āśrama has any truth, it must reveal ancient remains. It was this logic that led me to undertake excavations at this site.

The Stratigraphy And Chronology Of The Site

Chapter III

As mentioned in the previous chapter, the site has no mound but is a flat piece of land. Thus, there was nothing to suggest that a trench laid out at a particular place would be more fruitful than at any other. In such a situation, the first choice fell on the slope of the site towards the road where, it was felt the gamble would be easy and least exacting. For all intent and purposes, it was just a trial trench, marked ALB-1on the general plan (Fig. 2). But it turned out to be very fruitful, since it gave us almost all the basic information that the site had to yield. Altogether, six trenches were laid out, of which the one named ALB-3 was the longest, running across a major portion of the site. The story of ALB-1 was repeated in the other trenches as well, with some additional information, of course.

Much to our pleasant surprise, in Trench ALB-1, just within the top 25 centimeters from the surface we hit upon a structure of kiln-fired bricks. (Its details will be given in the next chapter when we deal with individual trenches and structures therein.) As we went a little deeper we came across an earlier wall as well. Thus, there were two successive structural Sub-periods, one following the other. But below these we drew a complete blank in terms of structures, either of kiln-fired bricks or even of mud bricks. It was a deposit of sandy loam of varying grades as we went lower and lower. But it was not completely bereft of signs of human occupation. Within this sandy loam there occurred stray potsherds of the well-known Northern Black Polished Ware and even of the black-slipped ware. The former was of a very fine quality with the usual variety of colors - steel grey, black, silvery, etc. and the shapes, though not many, included convex-sided dishes and corrugated bowls usually met with in the earlier stages of the evolution of this ware. We also came across post-holes

Pl. II Terracotta sealing : a, obverse and b, reverse.

(Pl. XI) and a few lumps of clay with reed-impressions (Pl. VII), indicating the presence of some wattle-and-daub huts.

To turn to the **chronology** of Bharadvāja Āśrama. As we have just noted, there were two distinct Periods of occupation at the site, which we have labelled as Periods I and II, from the bottom upwards. Whereas Period I was characterized by the early variety of the NBP Ware, Period II compressed two Sub-periods of structures of kiln-fired bricks. We have no Carbon-14 dates for either of these Periods and hence we have to date them on comparative and stylistic bases.

Earlier in this Report on page no. 6 we have given details of the Carbon-14 dates for the lower NBP Ware levels at Ayodhyā. Since the nature of the NBP Ware met with in Period I at Bharadvāja Āśrama is more or less similar to that found in the lower levels at Ayodhyā, it stands to reason that this Period too is assignable to the same chronological horizon, namely somewhere around the beginning of the first millennium BCE.

Associated with the structures of Period II were a few terracotta figurines (Pls. XXII - XXV) and a sealing (Pl. II) all ascribable to the Gupta Period. The sealing is oval in shape and bears on the reverse impressions of reeds and a knotted thread. There are also finger-impressions on one edge. The obverse is divisible in two parts, an upper and lower. In the upper part there is a vertical *chakra* in the center and standing figures of goddesses Yamunā and Gaṅgā on its sides. In the lower half there is a two-line inscription. It begins with the word *paramabhaṭṭāraka* in the upper line, after which the legend is not very clear. The second line ends with the word *adhikaraṇasya*. Evidently, the sealing belongs to some royal office. On paleographic ground it may be assigned to circa fifth century.

Thus, to sum up, the site is datable as follows:

Period I: around the beginning of the 1st millennium BCE.
Period II: *circa* 5th centuries CE.

The Trenches

Chapter

IV

Altogether six trenches were laid out at the site, numbered ALB-1 to ALB-6. Most of these were small-sized, measuring not more than 10-m square. However, one, namely ALB-3, covered a much wider area, though in this case too only parts were excavated (see Pl. III and Fig.2). The Stratigraphy and structures met with in these trenches are given below.

TRENCH ALB-1

This trench was laid out on the eastern edge of the site, where it sloped towards the adjacent road, namely Motilal Nehru Road (Fig. 2). Its west-east length was 5 meters, marked with pegs O to V. In width, it measured 4 meters from O to O'; and was excavated to a depth of 4.40 meters (Fig. 4).

Two Periods of occupation were identified called here Periods I and II from the bottom upwards. Of these, the upper one was further divisible into two structural Sub-periods, named IIA and IIB, again from the bottom upwards. As mentioned earlier in Chapter III on the Stratigraphy and Chronology of the site, Period I is characterized by the occurrence of the early NBP Ware and associated wares. Period II, with a long occupation-gap in between, is designated as the Gupta Period, on the basis of the pottery, etc.

Layers 3, 2A and 2 were associated with Period II, while Layer 1 overlay that occupation. Within Period II, as stated earlier, two structural Sub-periods, viz. IIA and IIB were identified (Figs. 3 and 4). The former is represented by Structures 2 and 2A, which put together show a part of a house-complex (Fig. 3 and Pls. IV & V). These structures have a deep foundation made of brick-bats set in an irregular fashion. On the inner side there is a floor of hard clay (Figs. 3 & 4 and Pl. IV), while on the exterior may be seen the base of a pot.

Pl. III Bharadvāja Āśrama : General view of the trenches.

BHARADVĀJA ĀŚRAMA 1978-79 : TRENCH ALB-1, PLAN 0-V
N
SCALE
1
0
1
METERS
0
I
II
III
IV
V
STR.NO.1,SUB-PERIOD IIB
STR.NO.2,SUB-PERIOD IIA
FLOOR OF
HARD CLAY
SUB-PERIOD IIA
POT
STR.NO.2A, SUB-PERIOD IIA
FOUNDATION PART OF
STRUCTURE NOS.2 AND 2A
0'
I'
II'
III'
IV'
V'

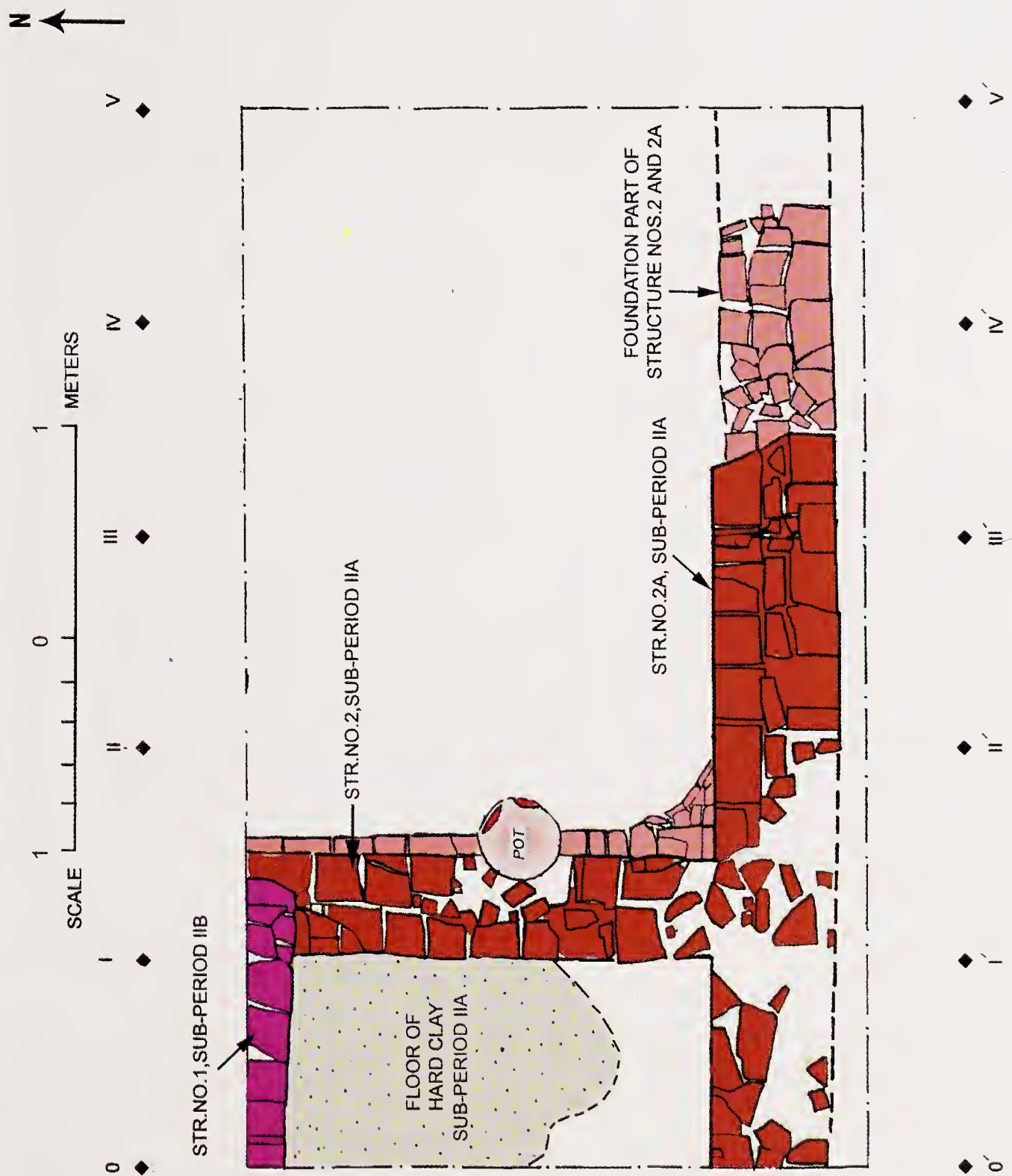
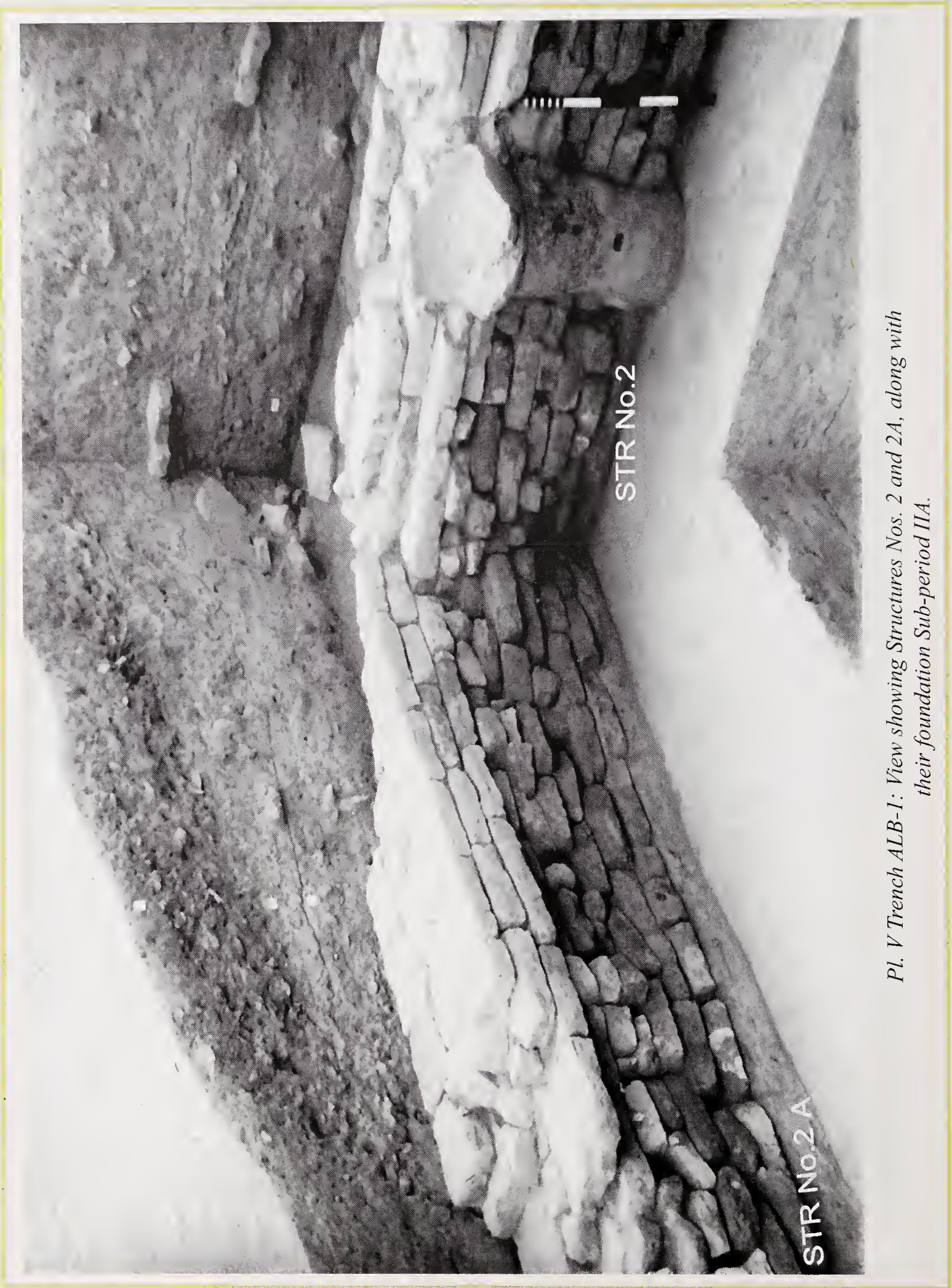



Fig. 3

BHARADVĀJA ĀŚRAMA 1978-79 : TRENCH ALB-1, SECTION 0-V, LOOKING NORTH
SCALE
1
0
1
METERS
WEST
0
II
III
IV
EAST
V
SUB-PERIOD IIB
SUB-PERIOD IIA
FLOOR OF HARD CLAY
BREAK OF OCCUPATION
STR.NO. 1
STR.NO. 2
FOUUNDATION PART OF STRUCTURE NO 2
PIT
PERIOD I
NATURAL SOIL
1 HUMUS WITH LOOSE EARTH
2 BROWNISH EARTH WITH OCCASIONAL BRICK-BATS
2A COMPACT EARTH WITH KANKAR, LIGHT BROWNISH IN COLOUR
3 LOOSE EARTH WITH BRICK-BATS, KANKAR AND POTTERY
4 SANDY LOAM WITH GREYISH TINGE (ANCIENT HUMUS). AT TOP
5 SANDY LOAM YELLOWISH BROWN IN COLOUR
6 SANDY LOAM DARK BROWN IN COLOUR,MORE CAMPACT EARTH THAN 5
7 DARK BROWN STICKY CLAY
8 HARD CLAY WITH KANKAR

Fig. 4

Pl. IV Trench ALB-1: View showing from the bottom upwards Structure Nos. 2 and 1, ascribable to Sub-periods IIA and IIB respectively.

Pl. V Trench ALB-1: View showing Structures Nos. 2 and 2A, along with their foundation Sub-period IIA.

With an intermediary gap, Structure No. 1 represents Sub-period IIB. Three of its courses are now available (Figs. 3 & 4 and Pl. IV).

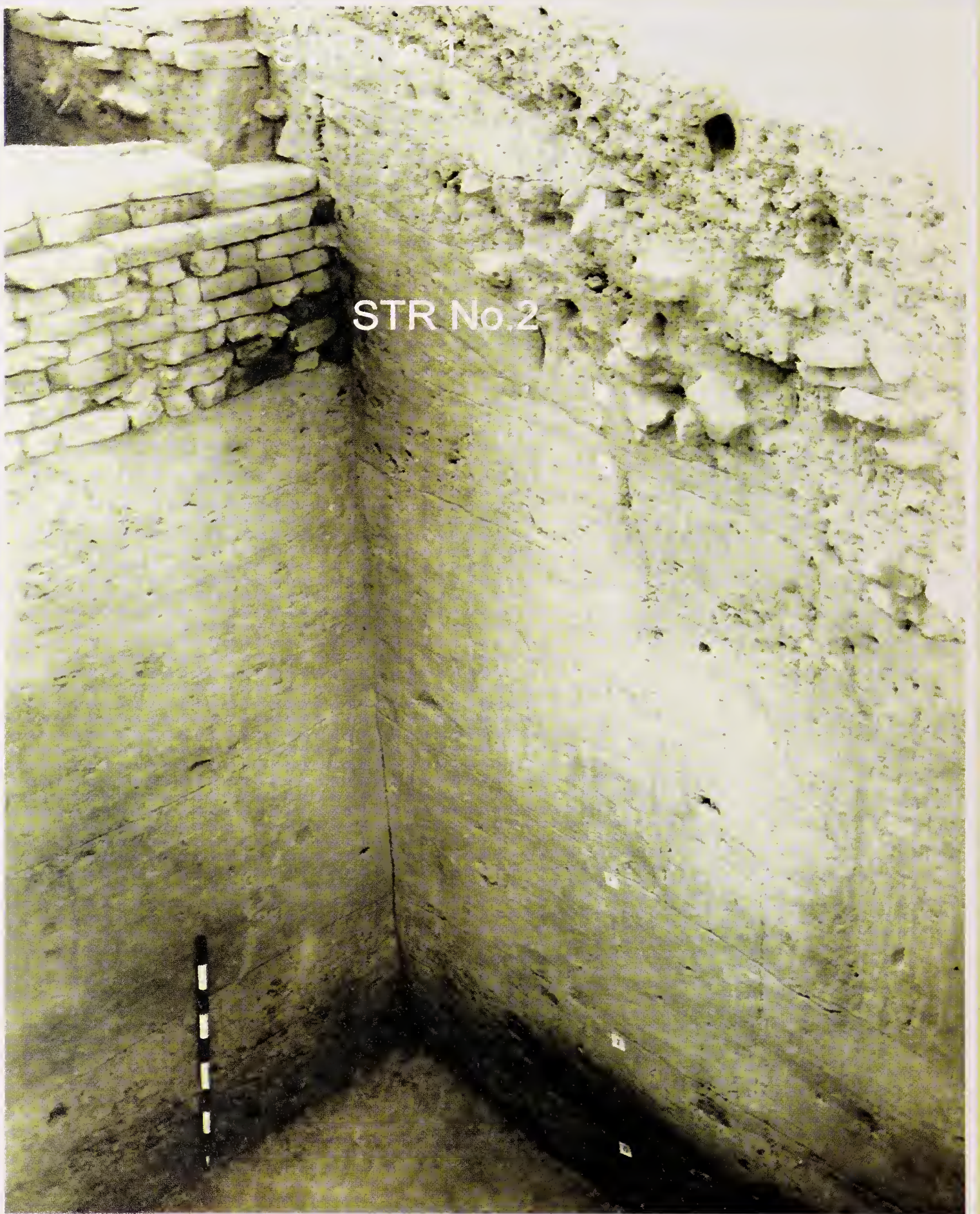
Most of the bricks in these structures are broken, but at least one brick was complete, measuring 36x24x6 cm.

No structure was found associated with Period I. In it three layers, namely 4, 5 and 6 were met with, accounting for a total deposit of 2 m (Fig. 4 and Pl. VI). These layers were composed essentially of sandy loam with minor variations in colour. The top of layer 4 was marked by ancient humus which indicates that the site was abandoned for a considerable time. In these layers were found stray sherds of the early NBP Ware, black-slipped and grey wares and some associated red wares. Besides, a lump of clay with reed-impression (Pl. VII) was found, indicating that the structures were made of wattle-and-daub. In this context it may be mentioned that post-holes were also found in another trench, viz. ALB-3, Sq. B1, Qd 4 (Pl. XI). Layers 7 and 8 constituted the natural soil.

TRENCH ALB-2

In order to ascertain the extent of the ancient habitation, a trench, named ALB-2, was laid out in the north-western part of the site close to the Bharadvāja Muni Temple complex (Fig. 2). In it no structural remains were found. However, the lower layers were similar to those already mentioned in the case of ALB-1.

TRENCH ALB-3

This was the largest trench dug up at Bharadvāja Āśrama, comprising as many as ten squares of 10x10 m each. These squares formed a grid pattern with Peg A1 as the central point. Thus, the squares taken up were A1, A2, B1, XA1, YB1, YC1, YC2, YC3, ZB1 and ZB2. However, in all these only a limited area was excavated (cf. Fig. 2). While the same kind of cultural sequence was noted in all these squares, structures of Period II were met with only in Squares A1, A2, B1 and ZB1. The same are described below.

Pl. VI Trench ALB-1: View showing from top downwards part of Structure No. 1 (Sub-period IIB), part of Structure No. 2 with its foundation (Sub-period IIA), and a series of sandy layers belonging to Period I, in which NBP Ware and allied material were found.

Pl. VII : Clay lump with reed impression, from ALB-1, Period I.

Squares A1 and A2

While in Square A1, parts of Quadrants 1, 2 and 4 were excavated, work was done in only Quadrants 1 and 4 of Square A2. Fig. 5 shows the Section of Quadrants 4 and 1 of Square A1, looking west, while Fig. 6 shows the Section of Quadrant 2 of Square A1, looking north. The Section of Qds 4 and 1 of Square A2, looking west, is given as Fig. 7. In this latter Section may be seen a floor of rammed bricks and a rickety wall, both belonging to Sub-period IIA.

As usual, two periods of occupation were noted in these squares. While Period I, viz. the Early NBP Period, is represented by Layers 4 downwards, Layers 3B upwards represent Period II, characterized by Gupta pottery and other artifacts.

Proceeding from left to right in the Section of Sq A1 (Fig. 5) may be seen Structure Nos. 1, 4 and 4A. The same are also seen on the Plan (Fig. 8) which also shows Structure Nos. 1, 2, 3 and 5.

Of these, Structure No. 1 (Pl. VIII) was an enclosure made of a single course of bricks-on-edge, the size of bricks being 38x24x5 cm. The dimensions of the enclosure were 60x25x24 cm. In it ash and some charcoal pieces were met with, suggesting that it may probably have been a *havana-kuṇḍa* (an enclosure for rituals associated with fire). Structure No. 2 (seen on the Plan, Fig. 8 but not in the section) lay adjacently to the east of Structure 1. Though it was not exposed to any considerable extent it nevertheless represents the south-west corner of a room, formed by two adjacent walls. Two courses of bricks were noted, the size of the bricks being 38.5x25x5 cm. Both the above-mentioned structures viz. 1 and 2, belonged to Sub-period IIB.

In the same Section (Fig. 5) as one nears Peg A1, one sees Structure Nos. 4 and 4A, sitting over layer 3A. These are ascribable to Sub-period IIA. The plan (Fig. 8) and photograph (Pl. IX) show two adjacent rooms with the walls oriented north-south and east-west. However, only one course of the walls was met with. The floors of these rooms were paved with brick-bats. The size of the bricks used in the walls is 39x24x5.6 cm.

BHARADVĀJA ĀŚRAMA 1982-83 : TRENCH ALB-3, Sq A1, Qds 4and1, SECTION, LOOKING WEST
SOUTH
NORTH
A2
A1
0
1
2
METERS
SUB-PERIOD IIB
SUB-PERIOD IIA
BREAK OF OCCUPATION
PERIOD I
NATURAL SOIL
PIT 1
PIT 3
PIT 5
SECTION AT- X Y
STR. NO. 4 SUB-PERIOD IIA
STR. NO. 4A SUB-PERIOD IIA
STR.NO.1, SUB-PERIOD IIB
UNEXCAVATED
UNEXCAVATED
1 HUMUS WITH LOOSE EARTH
1A BROWNISH EARTH WITH OCCASIONAL BRICK BATS
2 COMPACT EARTH WITH KANKAR, LIGHT BROWNISH IN COLOR
3 LOOSE EARTH WITH BRICK BATS
3A LOOSE EARTH WITH KANKAR AND POTTERY
4 SANDY LOAM WITH GREYISH TINGE (ANCIENT HUMUS) AT TOP
4A SANDY LOAM,YELLOWISH BROWN IN COLOR
4B SANDY LOAM,DARK BROWN IN COLOR ,MORE CAMPACT THAN 4A
5 DARK BROWN STICKY CLAY
6 HARD CLAY WITH KANKAR

Fig. 5

BHARADVĀJA ĀŚRAMA 1982-83: TRENCH ALB-3, Sq A1, Qd 2, SECTION,LOOKING NORTH
SCALE
1
0
1
METERS
WEST
A1
EAST
B-1
SUB-PERIOD IIB
SUB-PERIOD IIA
1
2
3
FLOOR
STR.NO.3,SUB-PERIOD IIB
UNEXCAVATED
FLOOR
STR.NO.5,SUB-PERIOD IIA

Fig. 6

BHARADVĀJA ĀŚRAMA 1982-83 : TRENCH ALB-3, Sq. A2, Qds 4 and 1,SECTION, LOOKING WEST
0
1
2
METERS
SOUTH
A3
NORTH
A2
SUB-PERIOD IIB
SUB-PERIOD IIA
BREAK OF OCCUPATION
PERIOD I
NATURAL SOIL
UNEXCAVAED
WALL
BRICK RAMMED FLOOR
BRICK RAMMED FLOOR
1 HUMUS WITH LOOSE EARTH
1A BROWNISH EARTH WITH OCCASIONAL BRICK-BATS
2 COMPACT EARTH WITH KANKAR, LIGHT BROWNISH IN COLOUR
3 LOOSE EARTH WITH BRICK-BATS
3A LOOSE EARTH WITH KANKAR AND POTTERY
4 SANDY LOAM WITH GREYISH TINGE (ANCIENT HUMUS). AT TOP
4A SANDY LOAM YELLOWISH BROWN IN COLOUR
4B SANDY LOAM DARK BROWN IN COLOUR,MORE CAMPACT EARTH THAN 4
5 DARK BROWN STICKY CLAY

Fig. 7

BHARADVĀJA ĀŚRAMA 1982-83: TRENCH ALB-3, Sq A1, Qds 1-4, PLAN
SCALE
1
0
1
METERS
N
A2
A1
B2
B1
STR.NO.1, SUB-PERIOD IIB
STR.NO.2, SUB-PERIOD IIB
UNEXCAVATED
Qd.4
STR. NO 4,SUB-PERIOD IIA
FLOOR
SECTION LINE
X
Y
FLOOR
STR. NO 4A,SUB-PERIOD IIA
UNEXCAVATED
Qd.1
UNEXCAVATED
Qd.3
STR. NO 3,SUB-PERIOD II B
UNEXCAVATED
STR. NO 5,SUB-PERIOD IIA
UNEXCAVATED
FLOOR
Qd.2
sks

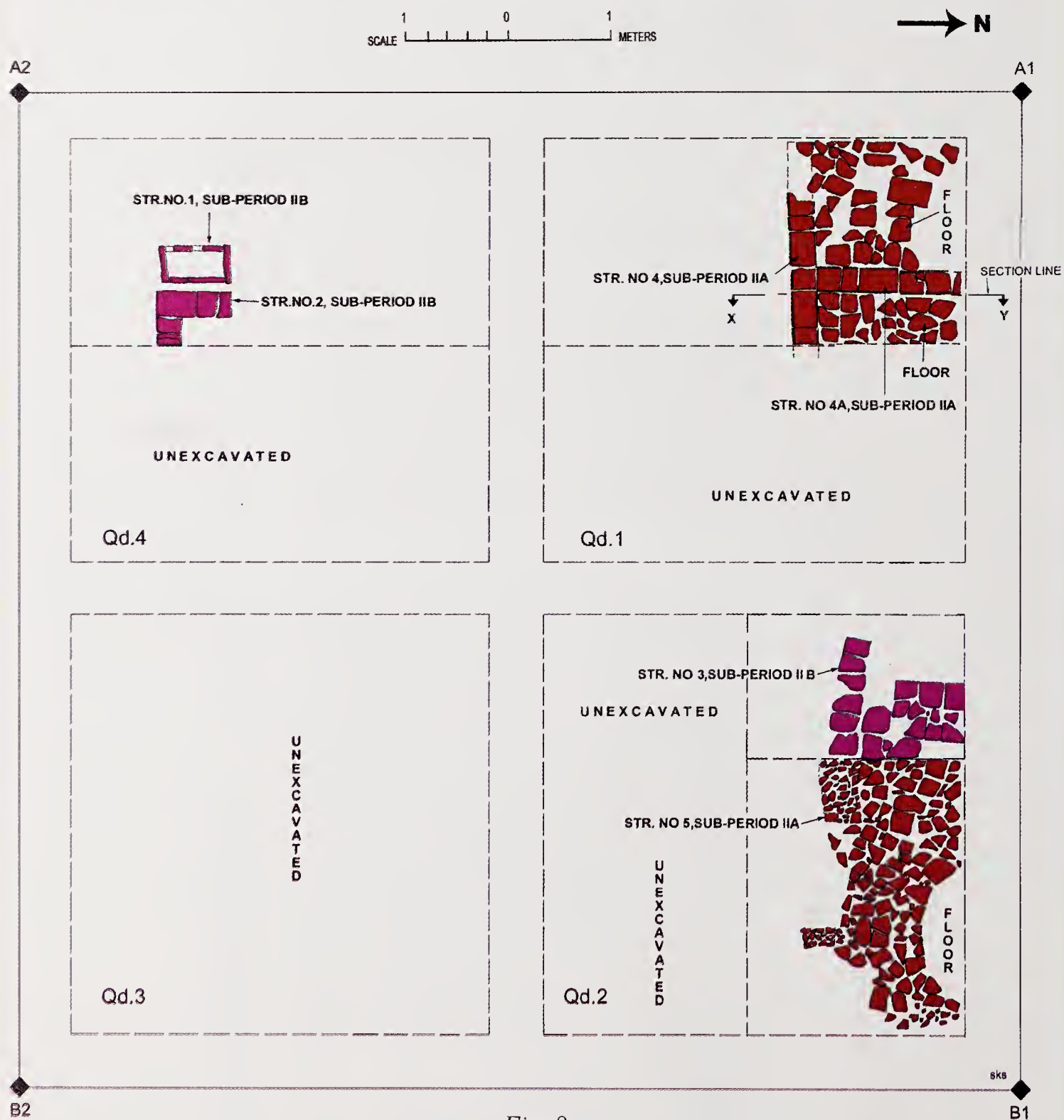
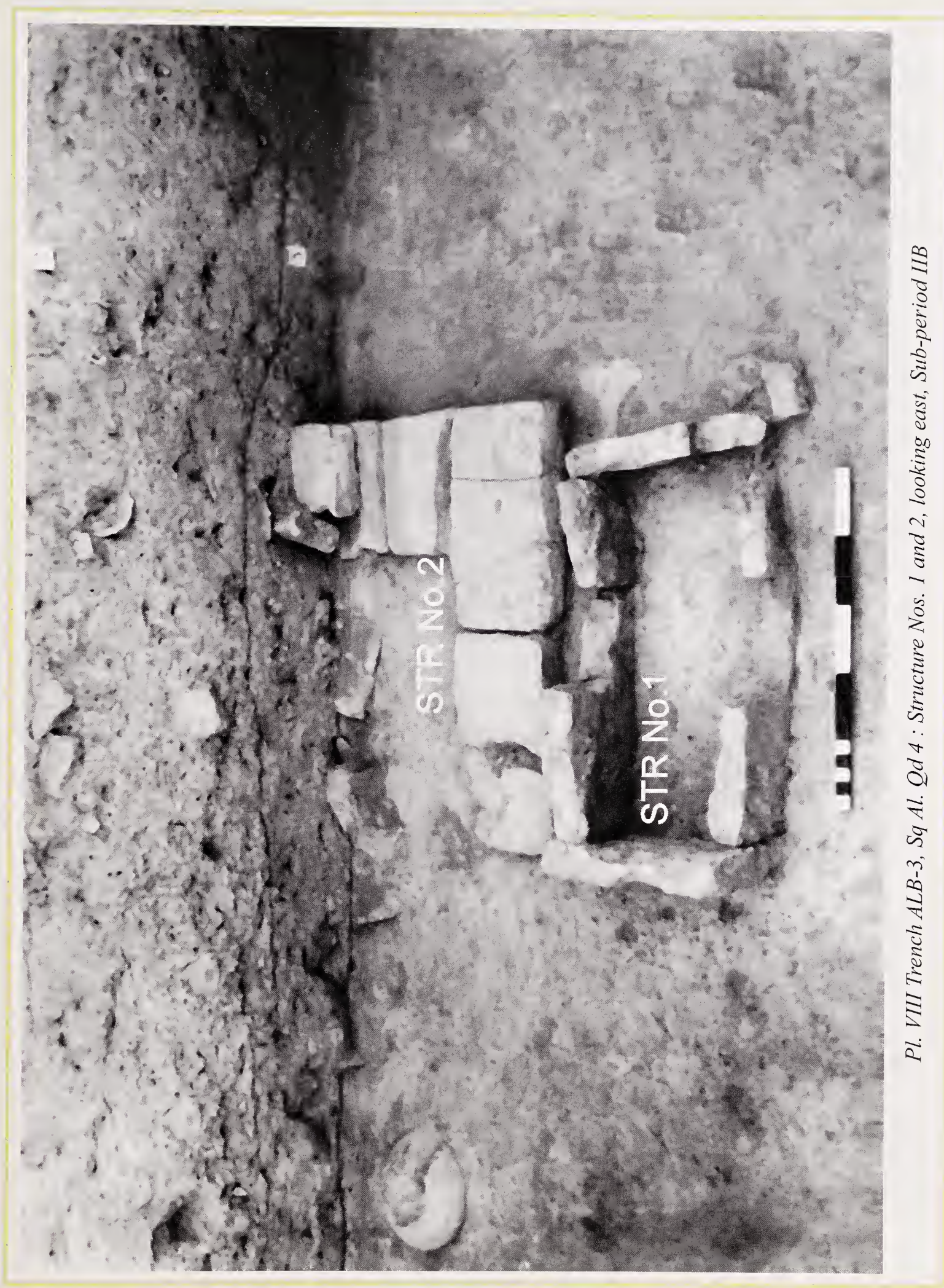
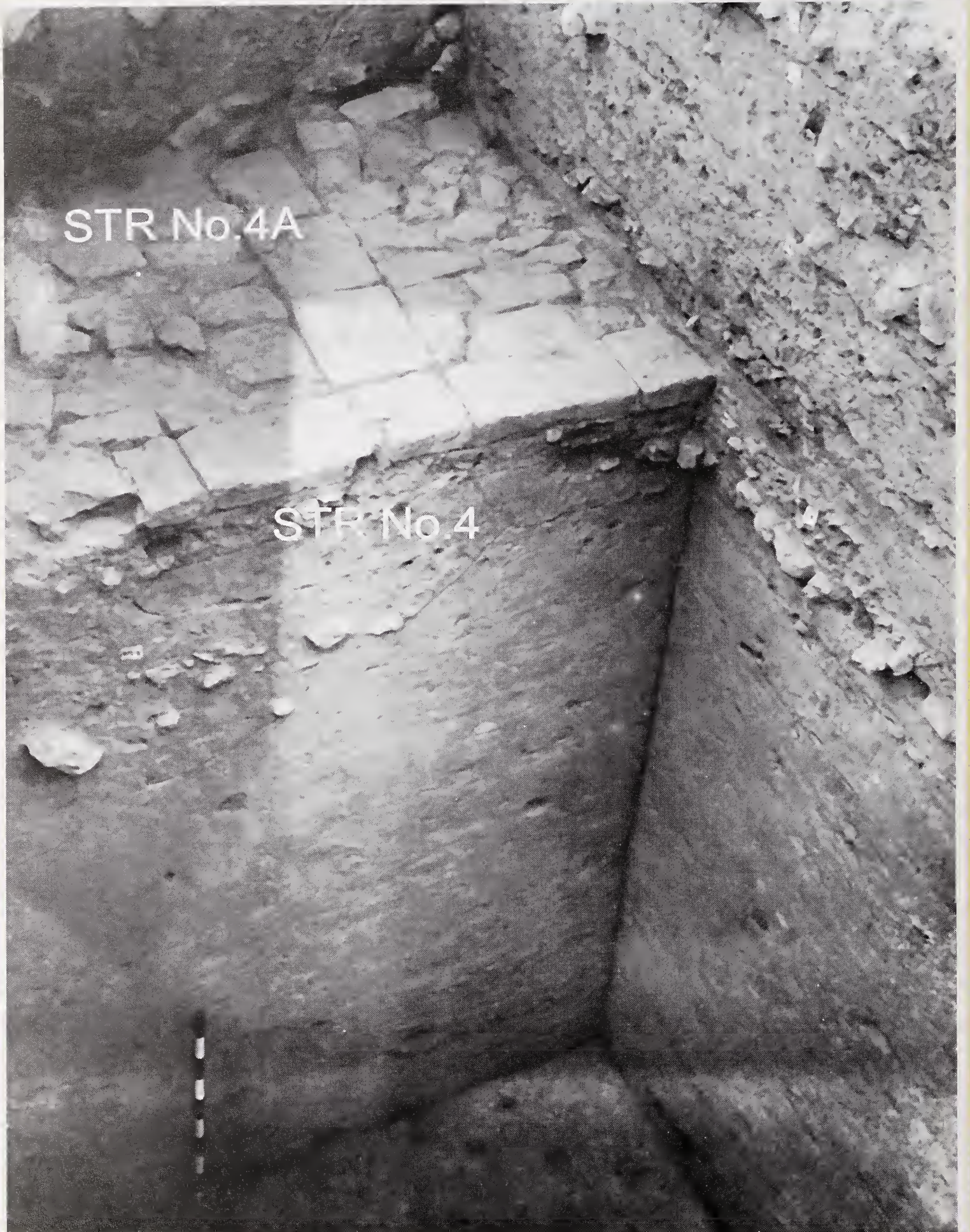



Fig. 8

Pl. VIII Trench ALB-3, Sq Al. Qd 4 : Structure Nos. 1 and 2, looking east, Sub-period IIB

Pl. IX Trench ALB-3: Sq Al, Qd 1 : Structure Nos. 4 and 4A, looking north-east, Sub-period IIA

Pl. X Trench ALB-3: Sq Al, Qd 2 : Structure Nos. 3 and 5, respectively ascribable to Sub-periods IIB and IIA.

To come to the Section of Quadrant 2 of Square A1, looking north (Fig. 6). In this area only the upper layers were excavated, representing Period II. Two structures, Nos. 3 and 5, were noted (cf. also Fig. 8 and Pl. X). Of these, Structure 3, a single-course floor of brick-bats lay at a depth of 79.5 cm below Peg A1 and is ascribable of Sub-period IIB. Lower down, at a depth of 1.26 m. below Peg A1, was noted another single-course floor of brick-bats, named Structure 5. Compared to Structure 3, this one covered a somewhat bigger area and belonged to Sub-period IIA. However, it may also be added that both these were only partly exposed.

Squares B1, ZB1 and ZB2

In Square B1, two Quadrants, viz. 1 and 4, were excavated (Fig. 2). In Square ZB1 also two Quadrants, viz. 1 and 4, were taken up. However, in square ZB2 only Quadrant 4 was excavated. Fig. 9 represents the Section from B2 to B1, looking west, while Fig. 10 shows the plan of structures met with in these quadrants.

Starting from Peg B2 and moving towards Peg B1, we see on the Section Structure No. 16, overlying Layer 2. Ascribable to Sub-period IIB, it has two courses of bricks. It may also be seen in the south-west corner of the plan (Fig. 10). Next is Structure No. 15, ascribable to Sub-period IIA. It is made of brick-bats and is available to a length of 2.20 m. The width is 60 cm and there are two courses. Thereafter one meets another wall, viz. Structure No. 7A, made partly of complete bricks and partly of brick-bats. It has three courses and is available to a length of 1.5 m, the width being 50 cm. Next comes a fragmentary wall, viz. Structure No. 7, available only to a length of 60 cm. However, its width, as in the case of Structure 7A, is 50 cm. There are two courses only. Structures 7 and 7A both belong to Sub-period IIA.

On the Plan (Fig. 10) may also be seen a storage jar, to the east of Structure No. 15. It has a diameter of 57 cm and is ascribable to Sub-period IIB. Further, to the east of Structure No. 7 was found another structural complex, Number 8. It consisted of a north-south wall available to a length of 1.30 m. and a floor of brick-bats. The complete bricks used in this wall measured 39x24x6 cm. This complex also belonged to Sub-period II A, though not shown in the Section (Fig. 9).

BHARADVĀJA ĀŚRAMA 1982 - 83 : TRENCH ALB-3, Sq B1, Qds 4&1,SECTION,LOOKING WEST
SOUTH
B2
NORTH
B1
SUB-PERIOD IIB
SUB-PERIOD IIA
STR.NO.-16
PIT-Z
PIT - Z
STR.NO 15
STR NO. 7A
STR NO. 7
BREAK OF OCCUPATION
UNEXCAVATED
UNEXCAVATED
PERIOD I
PIT-7
NATURAL SOIL
0
1
2
METERS
1 HUMUS WITH LOOSE EARTH
1A BROWNISH EARTH WITH OCCASIONAL BRICK-BATS
2 COMPACT EARTH WITH KANKAR, LIGHT BROWNISH IN COLOUR
3 LOOSE EARTH WITH BRICK-BATS
3A LOOSE EARTH WITH KANKAR AND POTTERY
4 SANDY LOAM WITH GREYISH TINGE (ANCIENT HUMUS). AT TOP
4A SANDY LOAM YELLOWISH BROWN IN COLOUR
4B SANDY LOAM DARK BROWN IN COLOUR.MORE CAMPACT EARTH THAN 4A
5 DARK BROWN STICKY CLAY
6 HARD CLAY WITH KANKAR

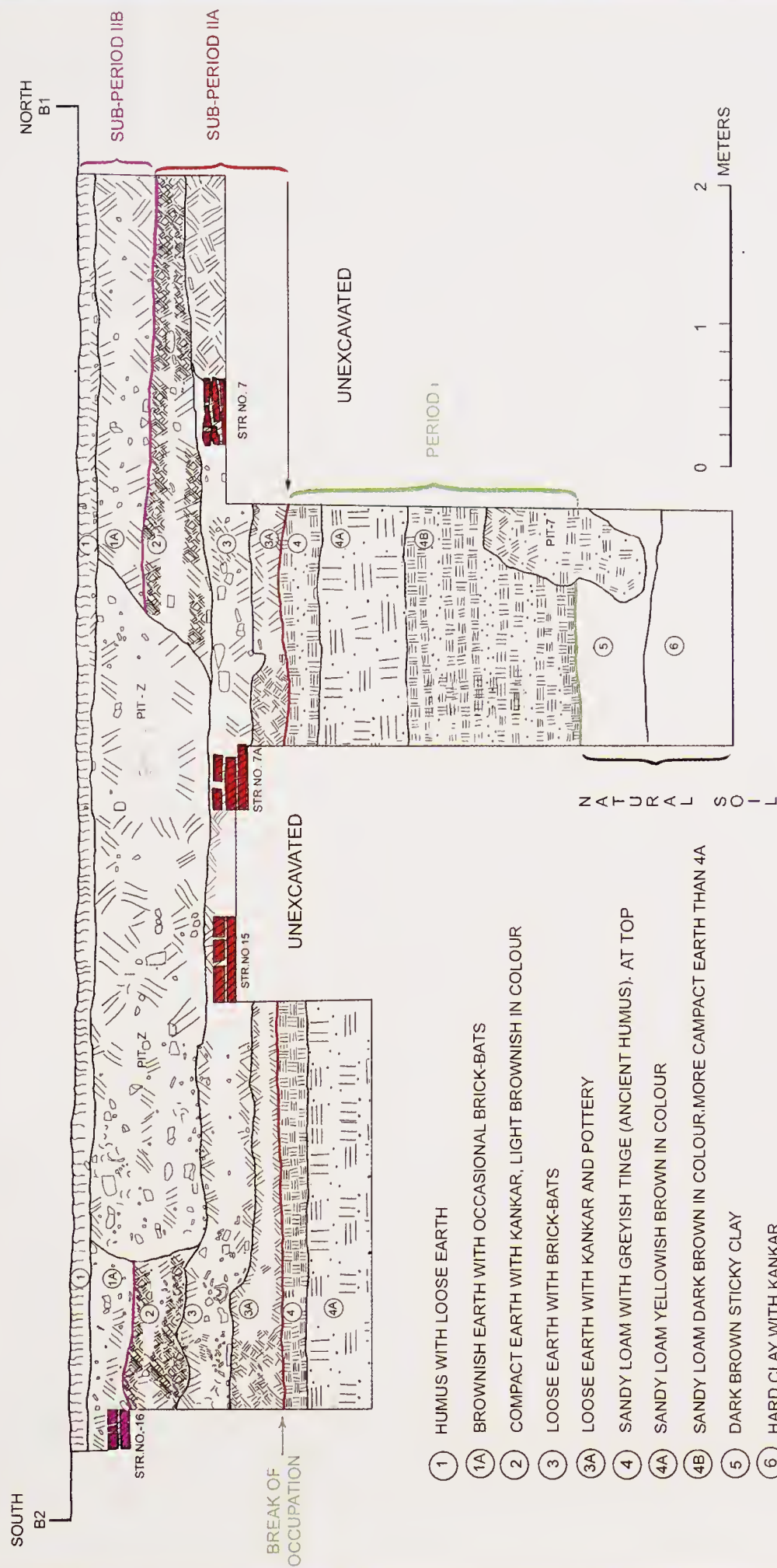



Fig. 9

BHARADVĀJA ĀŚRAMA 1982-83 : TRENCH ALB-3, Sq B1, Qds 1-4.PLAN
SCALE
1
0
1
METERS
N
B2
B1
C2
C1
STR.NO.16,SUB-PERIOD IIB
POST HOLES
PERIOD I
STR.NO.15,SUB-PERIOD IIA
POT
Qd.4
STR.NO.7A,SUB-PERIOD IIA
STR.NO.7,SUB-PERIOD IIA
UNEXCAVATED
Qd.1
UNEXCAVATED
Qd.3
STR.NO.8,SUB-PERIOD IIA
UNEXCAVATED
Qd.2

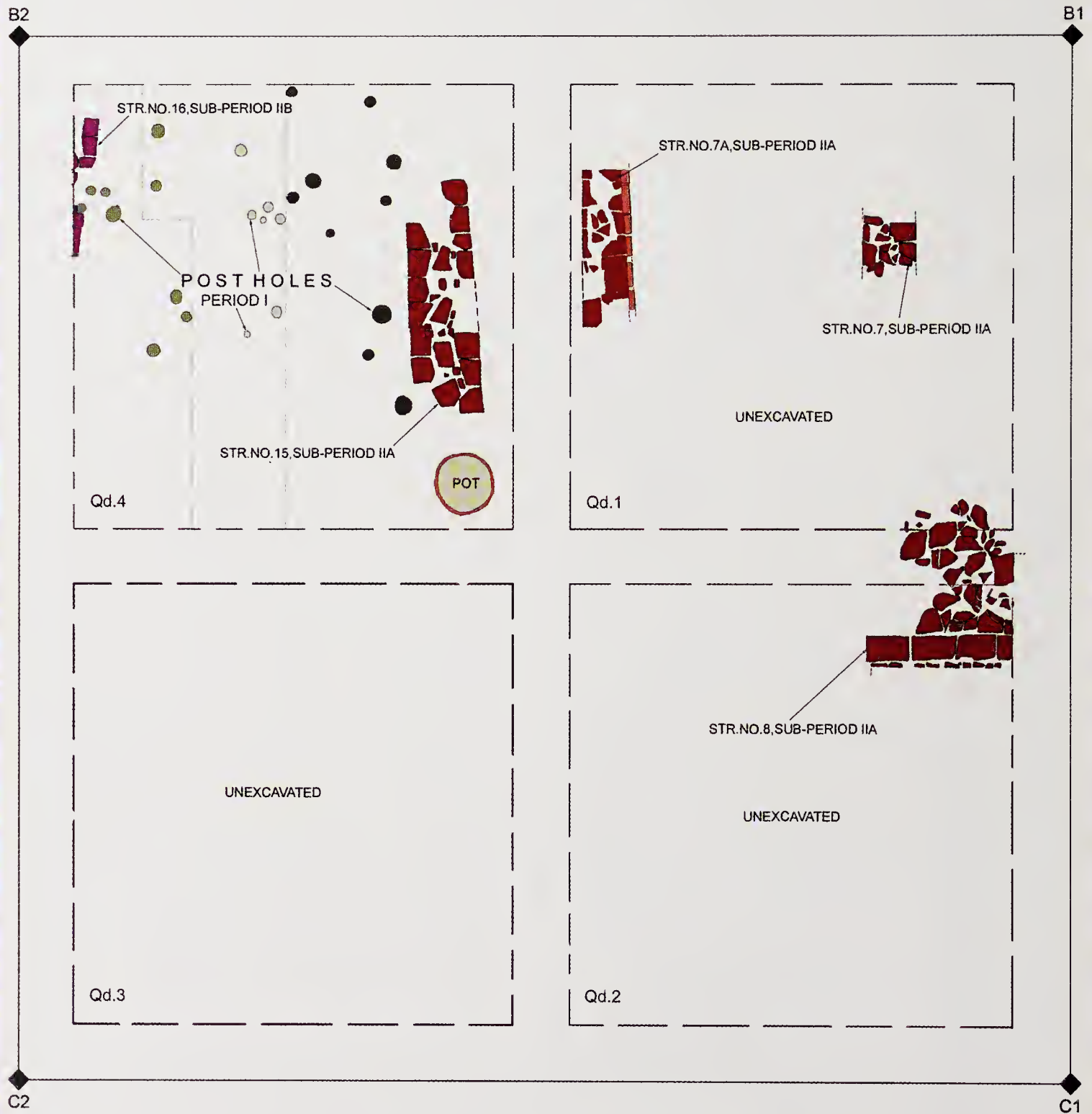



Fig. 10

Pl. XI Trench ALB-3, Sq Bl, Qd 4 : Looking north-east. Above, Structure No.15, Sub-period IIA; below, post-holes of Period I.

BHARADVĀJA ĀŚRAMA 1982 - 83 : TRENCH ALB-3, Sq ZB1, Qds 4 and 1, SECTION, LOOKING WEST
SOUTH B1
NORTH ZB1
SUB-PERIOD IIB
SUB-PERIOD IIA
BREAK OF OCCUPATION
PERIOD I
NATURAL SOIL
STR.NO.9
STR.NO.10
BRICK FLOOR
SECTION AT XY
STR.NO.10A
STR.NO.11
STR.NO.11A
1 HUMUS WITH LOOSE EARTH
1A BROWNISH EARTH WITH OCCASIONAL BRICK-BATS
2 COMPACT EARTH WITH KANKAR, LIGHT BROWNISH IN COLOUR
3 LOOSE EARTH WITH BRICK-BATS
3A LOOSE EARTH WITH KANKAR AND POTTERY
4 SANDY LOAM WITH GREYISH TINGE (ANCIENT HUMUS). AT TOP
4A SANDY LOAM YELLOWISH BROWN IN COLOUR
4B SANDY LOAM DARK BROWN IN COLOUR,MORE CAMPACT EARTH THAN 4A
5 DARK BROWN STICKY CLAY
6 HARD CLAY WITH KANKAR
0 1 2 METERS

Fig. 11

In Quadrant 4 of Square B1, a series of post-holes were met with in Layer 4A (Pl. XI). These belong to Period I. However, they occur at different depths below Peg B1, viz. 1.90 m, 2.09 m and 2.20 m, indicating constructional activity more than once. The diameters of these holes varies from 5 cm to 13 cm and depths from 4 cm to 11 cm. This would indicate that assorted bamboos were used for the construction of the structures concerned. Further, the occurrence of a few clay lumps with reed marks (in Trench ALB-1, Pl. VII) shows that the bamboo-cum-reed structures were plastered with clay.

Figs 11 and 12 relate respectively to the Section and Plan of Sq. ZB1. While the Pegs in the drawn Section are B1 (on the south) and ZB1 (on the north), the section across the structures numbered 9, 10, 10A 11 and 11A runs from X to Y as marked on the Section as well as on the Plan (see also Pl. XII). All these structures are ascribable to Sub-period IIB. Though Structure No. 9 is very much disturbed, at one place it is available to a height of 5 courses. Again, though Structure No. 9A is also disturbed it may have been a return wall of No. 9. Structure Nos. 10 and 10A are floors which run between Structure Nos. 9 and 11. Embedded in the western part of floor No. 10, there was the lower half of a large jar. Lying over these floors was also a moulded brick (Pls. XIII and LII). Wall No. 11 runs east-west and its return wall, No. 11A, runs north-south. A maximum of three courses were available. Seen in the western part of Qd 1 (Fig. 12) is a wall partly exposed, No. 12, having three courses of bricks. This is not shown in the Section but belongs to Sub-period IIB.

Ascribable to Sub-period IIA are bits of two structures which have been numbered 13 and 13A.

In Square ZB2 only a part of Qd 1 was excavated, in which a small structure ascribable to Sub-period II A was met with. It is not shown either on Plan or Section.

BHARADVĀJA ĀŚRAMA 1982-83: TRENCH ALB-3, Sq ZB 1, Qds 1-4, PLAN
SCALE
1
0
1
METERS
N
B1
ZB1
C1
ZC1
STR.NO.12, SUB-PERIOD IIB
STR.NO.11A, SUB-PERIOD IIB
WALL
JAR
STR.NO.10, SUB-PERIOD IIB
STR.NO.9, SUB-PERIOD IIB
FLOOR
STR.NO.10A, SUB-PERIOD IIB
FLOOR
X
Y
STR.NO.9 A
SUB-PERIOD IIB
SECTION AT X-Y
STR.NO.13A, SUB-PERIOD IIA
MOULDED BRICK
STR.NO.11, SUB-PERIOD IIB
Qd 4
UNEXCAVATED
Qd 1
UNEXCAVATED
STR.NO.13, SUB-PERIOD IIA
UNEXCAVATED
UNEXCAVATED
Qd 3
Qd 2

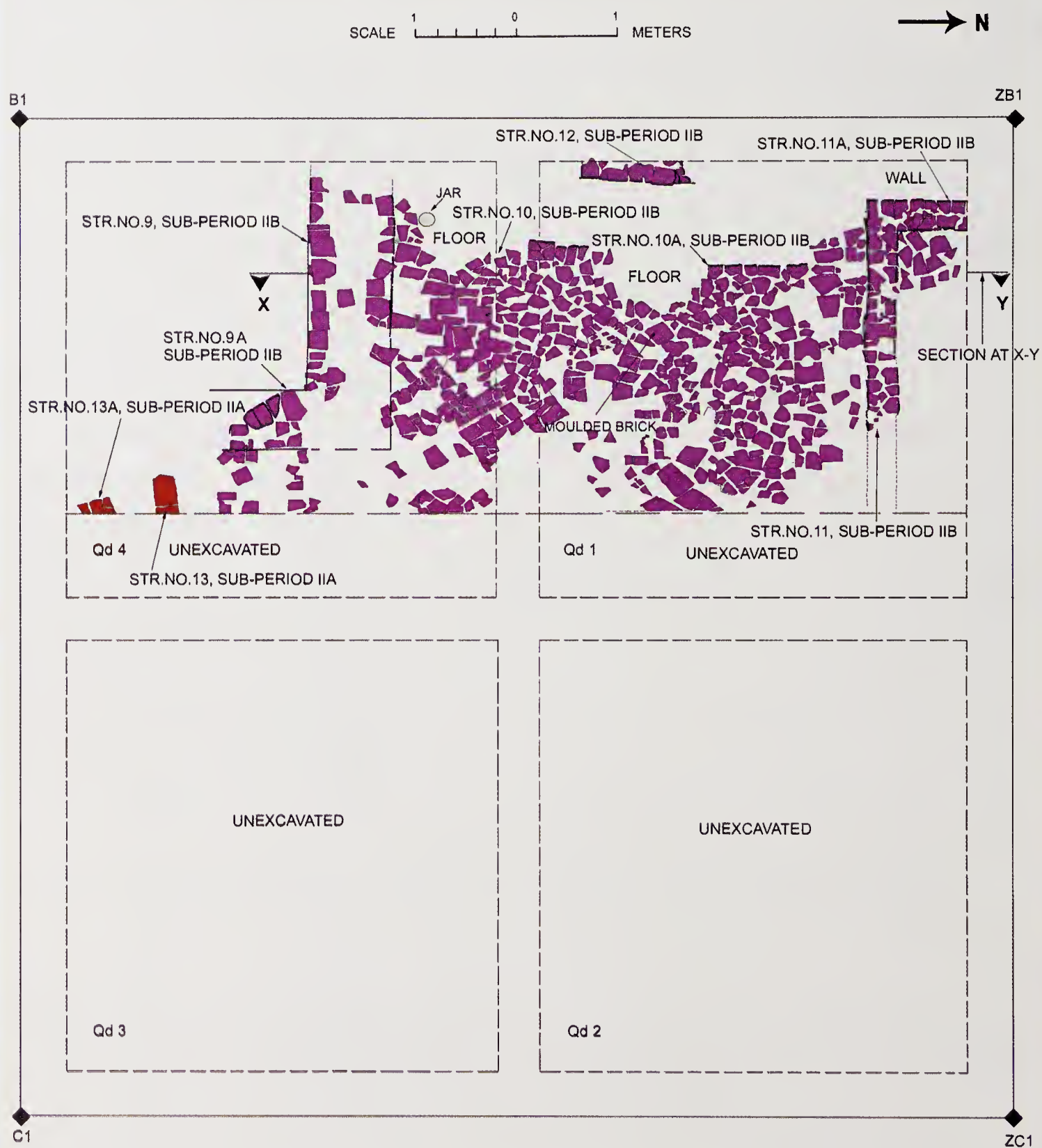



Fig. 12

Pl. XII Trench ALB-3; Sq ZB1, Qds 1 and 4 : Plan showing various structures, looking north.

Pl. XIII Trench ALB-3; Sq ZB1, Qds 1 and 4 : A moulded brick may be seen in the lower middle area.

Other Squares

Minor trenching was also done in Squares XA1, YB1, YC1, YC2 and YC3 (Fig. 2). While in these the layers encountered were the same as in the other Squares of ALB-3, no structure was found. Hence no section or plan is given here.

TRENCH ALB-4

On the east of the main Bharadvāja Āśrama area, across the Motilal Nehru Road, there is small piece of land which, on exploration, yielded a few stray sherds of the NBP Ware, indicating that the habitation might have extended a bit in that direction. Here a small trench, named ALB-4, was laid out (Fig. 2). However, the stratigraphy therein was completely messed up. This seems to be due to the fact that over here lies an *akhārā* (an Indian-style wrestling ground) for which the soil has been dug up over and over again.

TRENCH ALB-5

Ancient habitation does seem to have extended in a northerly direction, for herein a trench, named ALB-5 (Fig. 2) yielded a 40-cm wide structure of Period II. Of it, three courses were found, the size of the bricks being 40x26x6 cm. Preceding the Gupta levels were the usual sandy layers, varying in shade from greyish to brownish. From these were picked up stray sherds of the NBPW and allied wares.

TRENCH ALB-6

This trench was laid out in the southern part of site with a view of ascertaining the extent of the occupation in that direction (Fig. 2). Though no structures of the Gupta Period were met with, an U-shaped *chūlhā* (hearth) measuring 26x19 cm. was noted in layer 3, at a depth of 84 cm. below the surface. The lower layers followed the usual pattern and yielded stray sherds of the NBPW and associated wares.

The Pottery*

Chapter V

Introduction

As stated in Chapter III, there are two entirely different cultural periods at the site, with a break of occupation in between. The earlier occupational deposits (Period I) of about 2 m over the virgin soil are distinguished by the Early NBP Ware culture and are represented by layers 4 downwards.

After a considerable gap of time, the site was re-occupied during the Gupta Period (Period II). The deposits of this period, about 1-1.50 m in thickness, are represented by the Layers 3 and 2. These are further divided into two structural Sub-periods, viz. IIA and IIB.

The pottery of Period I is entirely different in shape and texture from that of Period II. Period-wise, the characteristic features of the pottery are as follows.

PERIOD I

The pottery of Period I includes examples of early NBP Ware, black-slipped ware, grey ware and associated red ware. It is entirely wheel-made. The early NBP Ware mainly consists of convex-sided bowls and dishes with sharp-edged incurved rim. Besides, straight-sided bowls with vertical sharpened rim are also found. A few specimens have the evidence of corrugated exterior. A fragment of cordoned bowl has also been recovered from the site. As usual, the NBP Ware is made of well-levigated clay, has fine fabric and is well fired. This ware has a variety of shiny shades, viz. golden, slivery, red, steel grey, black, etc. (Pl. XIV). However, the slip on many pieces has peeled off. Some specimens have different colours on the interior, viz. red, light to dark grey and grey with golden shine.

* Under my guidance, this chapter has been written by **Shri Vishnu Kant**, Assistant Superintending Archaeologist.

Pl. XIV Multicoloured sherds of NBPW, Period I.

The black-slipped ware also includes convex-sided bowls and dishes and straight-sided bowls with vertical, sharpened rim. It too has a fine fabric. Special mention is to be made of a fragment of a basal part of a dish of black-slipped ware which bears a stamped decoration at the centre of the interior. (Pl. XVIII; Fig. 19)

The red ware has medium to fine fabric. The shapes include: medium-to-small-sized vases with collared or flaring out rim; convex-sided dishes with incurved rim; straight-sided bowls with vertical, sharpened rim; and lipped bowls. Thumb/finger impressions on appliqué band is the only example representing decorated pottery.

Selected examples are given below:

NBP Ware (Fig. 13 and Pl. XV)

1. Fragment of a cordoned bowl of NBP ware: The middle part has an oblique shoulder, mildly ledged carination and externally corrugated body; fine fabric, well fired, dark grey core, treated with a golden black slip. ALB-3, Sq B1, Qds 3 and 4, Layer 4A. Period I.

2. Fragment of a mildly lipped (?) bowl of NBP ware: slightly everted rim, somewhat tapering sides; medium fabric, well fired, grey core, treated with a black slip. ALB-1, Pegs I-III, Layer 5. Period I.

3. Fragment of a dish of NBP ware: featureless rim, tapering sides with a mild depression on the exterior; fine fabric, well fired, grey core, treated with a golden black slip. ALB-1, Pegs I-III, Layer 5. Period I.

4. Fragment of a cordoned-bowl of NBP ware: featureless vertical rim, almost straight shoulder with a ledged carination below; fine fabric, well fired, thin grey core, treated with a golden black slip. ALB-1, Pegs I-III, Layer 5. Period I.

5. Fragment of a dish of NBP ware: incurved rim, convex sides; fine fabric, well fired, grey core, treated with a golden black slip. ALB-1, Pegs I-III, Layer 5. Period I.

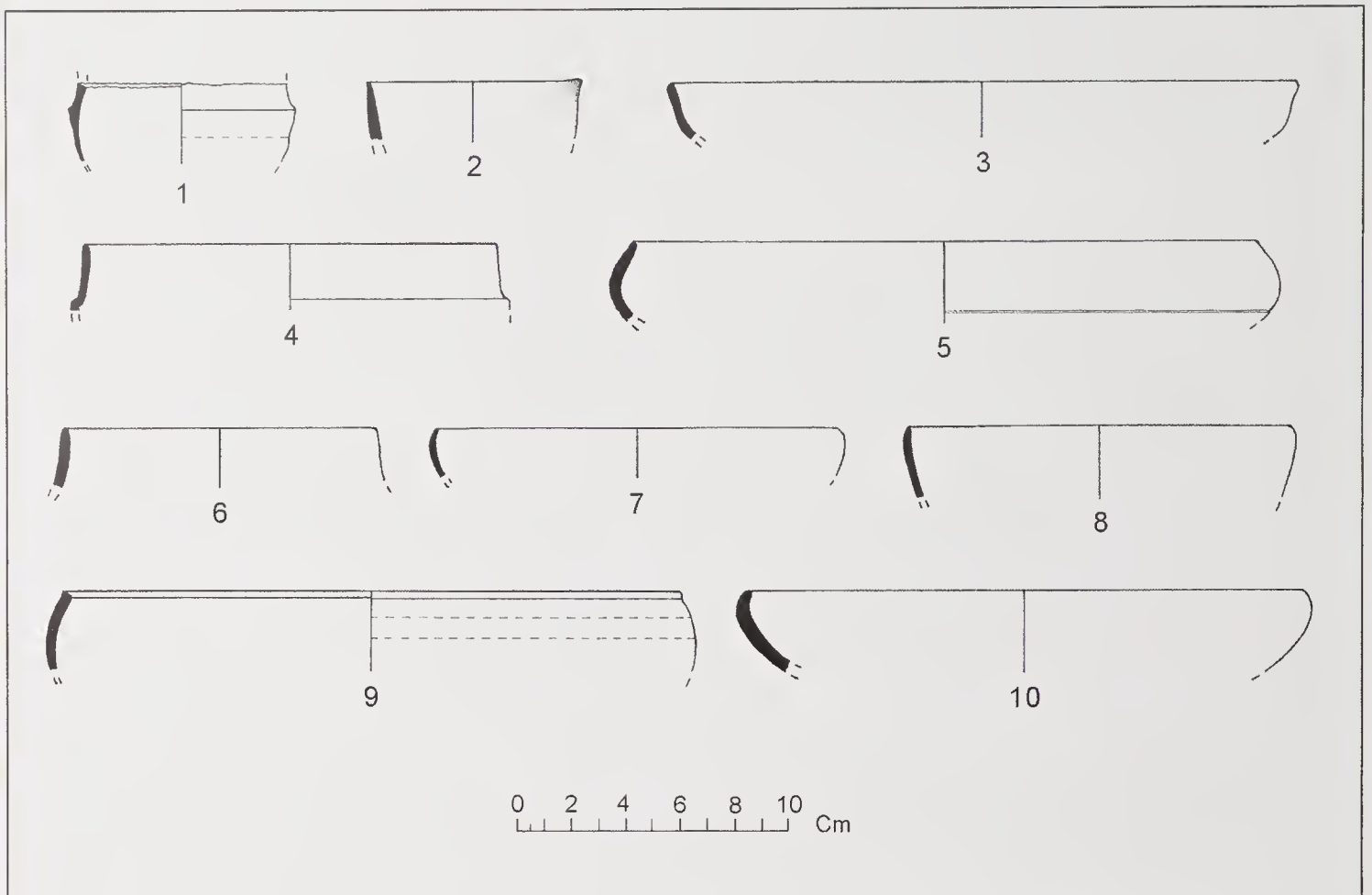



Fig. 13 NBPW, Period I.

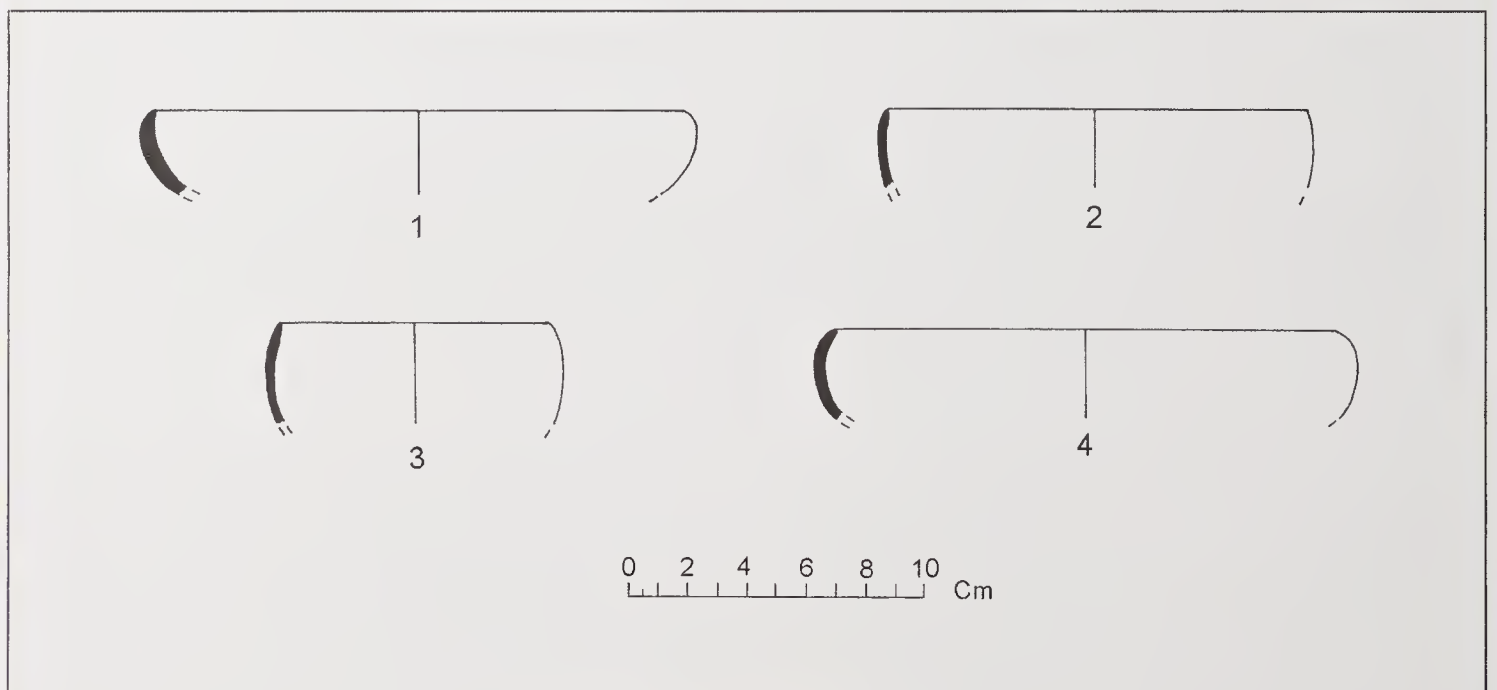



Fig. 14 Grey ware, Period I.

Pl. XV NBPW, Period I.

6. Fragment of a bowl of NBP ware: featureless vertical rim; medium fabric, well fired, grey core, treated with a black slip. ALB-1, Pegs I-III, Layer 5. Period I.

7. Fragment of a dish of NBP ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, dark grey core, remains of a black slip. ALB-3, Sq B1, Qd 4, Layer 4A. Period I.

8. Fragment of a bowl of NBP ware: sharp-edged rim, tapering sides; fine fabric, well fired, grey core, treated with a shiny black slip. ALB-3, Sq B1, Qd 4, Layer 4A. Period I.

9. Fragment of a dish of NBP ware: incurved featureless rim, mildly corrugated, convex sides; fine fabric, well fired, grey core, treated with a glossy black slip. ALB-1, Pegs I-V, Layer 5. Period I.

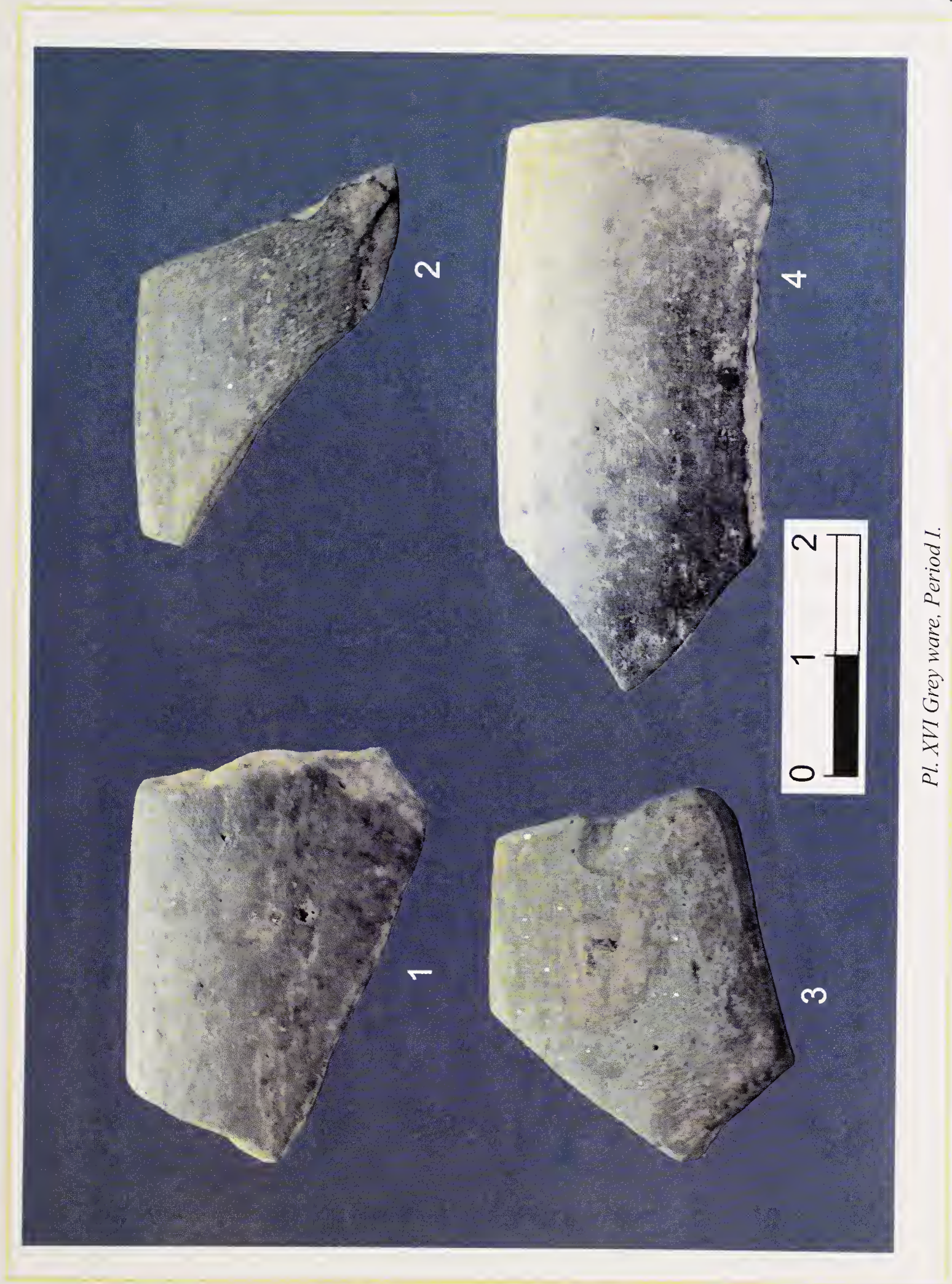
10. Fragment of a dish of NBP ware: incurved featureless rim, tapering sides; medium fabric, well fired, thick grey core, treated with a black slip. ALB-1, Pegs I-V, Layer 4. Period I.

Grey ware (Fig. 14 and Pl. XVI)

1. Fragment of a dish of grey ware: sharp-edged incurved rim, convex sides; medium fabric, well fired, grey core. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

2. Fragment of a bowl of grey ware: sharp-edged almost vertical rim, mildly convex sides; fine fabric, well fired, thin grey core, grey slip. ALB-1, Pegs I-V, Layer 4. Period I.

3. Fragment of a bowl of grey ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, thin grey core. ALB-1, Pegs I-II, Layer 4. Period I.

4. Fragment of a dish of grey ware: less-sharp-edged incurved rim, convex sides; medium fabric, well fired, dark grey core, grey slip. ALB-1, Pegs I-V, Layer 4. Period I.

Pl. XVI Grey ware, Period I.

Black-slipped ware (Fig. 15)

1. Fragment of a dish of black-slipped ware: sharp-edged incurved rim with a depression on the interior, convex sides; medium fabric, well fired, grey core, remains of a black slip. ALB-1, Pegs 0-I, Layer 4. Period I.

2. Fragment of a dish of black-slipped ware: featureless incurved rim, convex sides; medium fabric, well fired, dark grey thick core, faint remains of a black slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

3. Fragment of a dish of black-slipped ware: sharp-edged slightly incurved rim, convex sides; medium fabric, well fired, thick grey core, faint remains of a black slip. ALB-3, Sq B1, Qds 1 and 2, Layer 4A. Period I.

4. Fragment of a bowl of black-slipped ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, thin grey core, remains of a black slip. ALB-1, Pegs 1-III, Layer 4. Period I.

5. Fragment of a bowl of black-slipped ware: sharp-edged almost vertical rim, tapering sides; fine fabric, well fired, dark grey core, treated with a brownish-black slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

6. Fragment of a small dish of black-slipped ware: sharp-edged incurved rim, tapering sides; fine fabric, well fired, thin grey core, treated with a black slip. ALB-1, Pegs 1-III, Layer 4. Period I.

7. Fragment of a bowl of black-slipped ware: sharp-edged almost vertical rim, convex sides; fine fabric, well fired, thin grey core, treated with a black slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

8. Fragment of a bowl of black-slipped ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, thin grey core, remains of a black slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

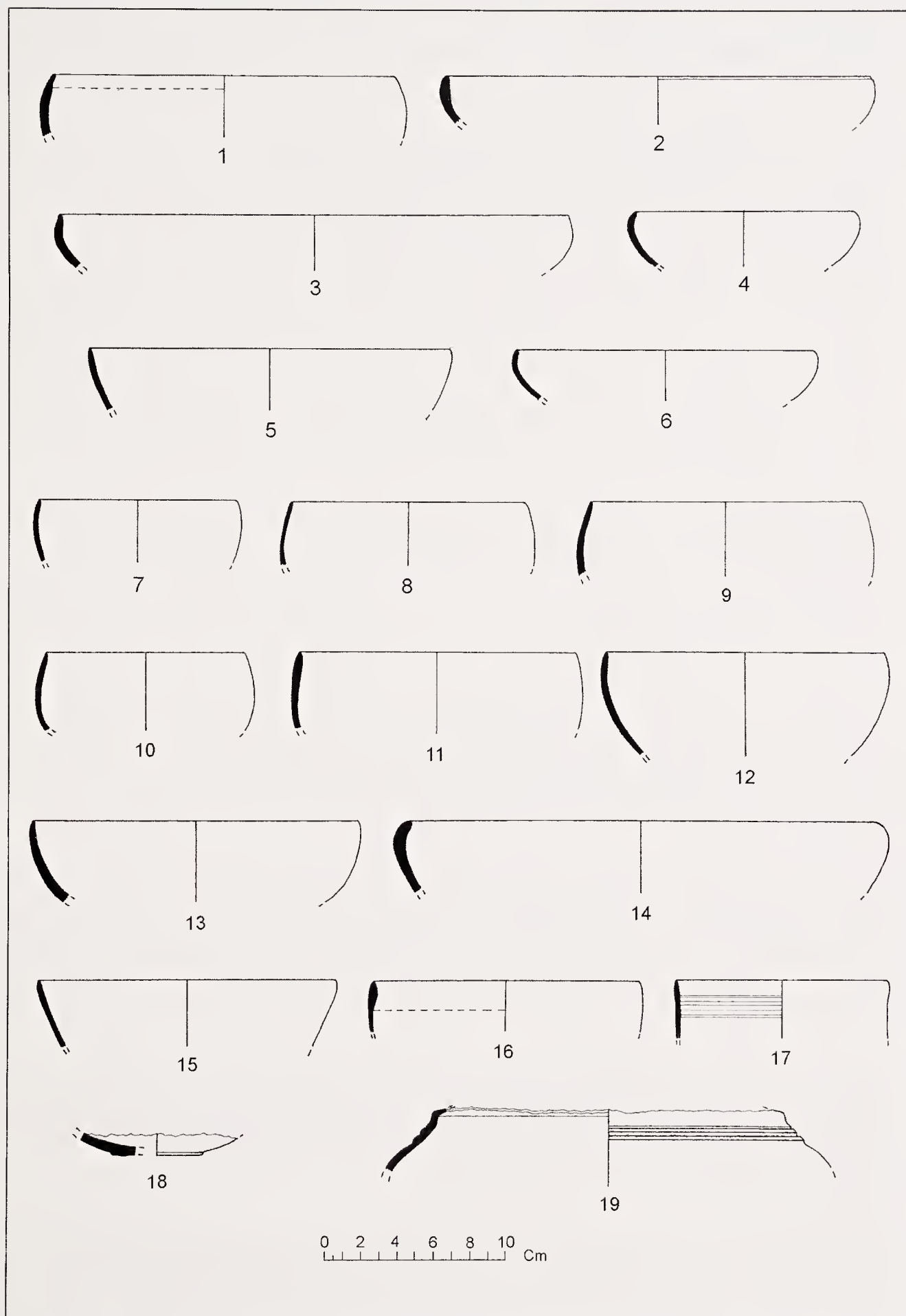



Fig. 15 Black-slipped ware, Period I.

9. Fragment of a bowl of black-slipped ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, grey core, remains of a black slip. ALB-1, Pegs 0-I, Layer 4. Period I.

10. Fragment of a bowl of black-slipped ware: internally bevelled sharp-edged rim, convex sides; fine fabric, well fired, grey core, faint remains of a black slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

11. Fragment of a bowl of black-slipped ware: almost vertical rim, mildly convex sides; medium fabric, well fired, dark grey core, treated with a fine black slip. ALB-1, Pegs I-II, Layer 4. Period I.

12. Fragment of a bowl of black-slipped ware: sharp-edged almost vertical rim, convex sides; fine fabric, well fired, grey core, faint remains of a black slip. ALB-3, Sq B1, Qds 1 and 2, Layer 4A. Period I.

13. Fragment of a bowl of black-slipped ware: sharp-edged almost vertical rim, convex sides; medium fabric, well fired, dark grey core, treated with a black slip. ALB-1, Pegs 0-I, Layer 4. Period I.

14. Fragment of a dish of black-slipped ware: featureless incurved rim, tapering sides; medium fabric, well fired, thick grey core, treated with a black slip. ALB-1, Pegs 0-I, Layer 4. Period I.

15. Fragment of a bowl of black-slipped ware: sharp-edged rim, tapering sides; fine fabric, well fired, thin grey core, remains of a black slip with a reddish patch. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

16. Fragment of a bowl of black-slipped ware: internally bevelled rim, mildly convex sides with a mild groove on the interior; fine fabric, well fired, thin grey core, treated with a black slip. ALB-1, Pegs I-V, Layer 4. Period I.

17. Fragment of a bowl of black-slipped ware: sharp-edged vertical rim, slightly concave sides; fine fabric, well fired, thin grey core, treated with a fine black slip. ALB-3, Sq A1, Qd 1, Layer 4. Period I.

18. Lower part of a pot of black-slipped ware: disc-base with tapering sides; medium fabric, well fired, thick grey core, treated with a black slip. ALB-1, Unstratified.

19. Fragment of a vase of black-slipped ware: ribbed shoulder; medium fabric, well fired, grey core, treated with a black slip. ALB-1, Unstratified.

Red ware (Fig. 16)

1. Fragment of the rim of a vase of red ware: externally grooved vertical rim with a depression on the interior, evidence of a concave neck; fine fabric, well fired, thin red core, faint remains of a chocolate slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

2. Fragment of the rim of a basin of red ware: externally collared incurved rim, tapering sides, medium fabric, well fired, red core. ALB-1, Pegs I-V, Layer 4. Period I.

3. Fragment of the rim and neck of a vase of red ware: thickened and slightly beaked rim, externally convex neck, medium fabric, well fired, dull red core. ALB-1, Pegs 0-I, Layer 4. Period I.

4. Fragment of the rim of a vase of red ware: externally thickened and grooved rim, slightly convex neck; medium fabric, not so well fired, black core in between the red outer and inner surface, very faint remains of a light red slip. ALB-1, Pegs 0-I, Layer 4. Period I.

5. Fragment of the rim and neck of a vase of red ware: flared-out rim, concave neck; medium fabric, well fired, dull red core, treated with a thin red slip. ALB-1, Pegs 0–1, Layer 4. Period I.

6. Fragment of the rim and neck of a vase of red ware: flared-out rim, concave neck; medium fabric, not so well fired, dull red and smoky core. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

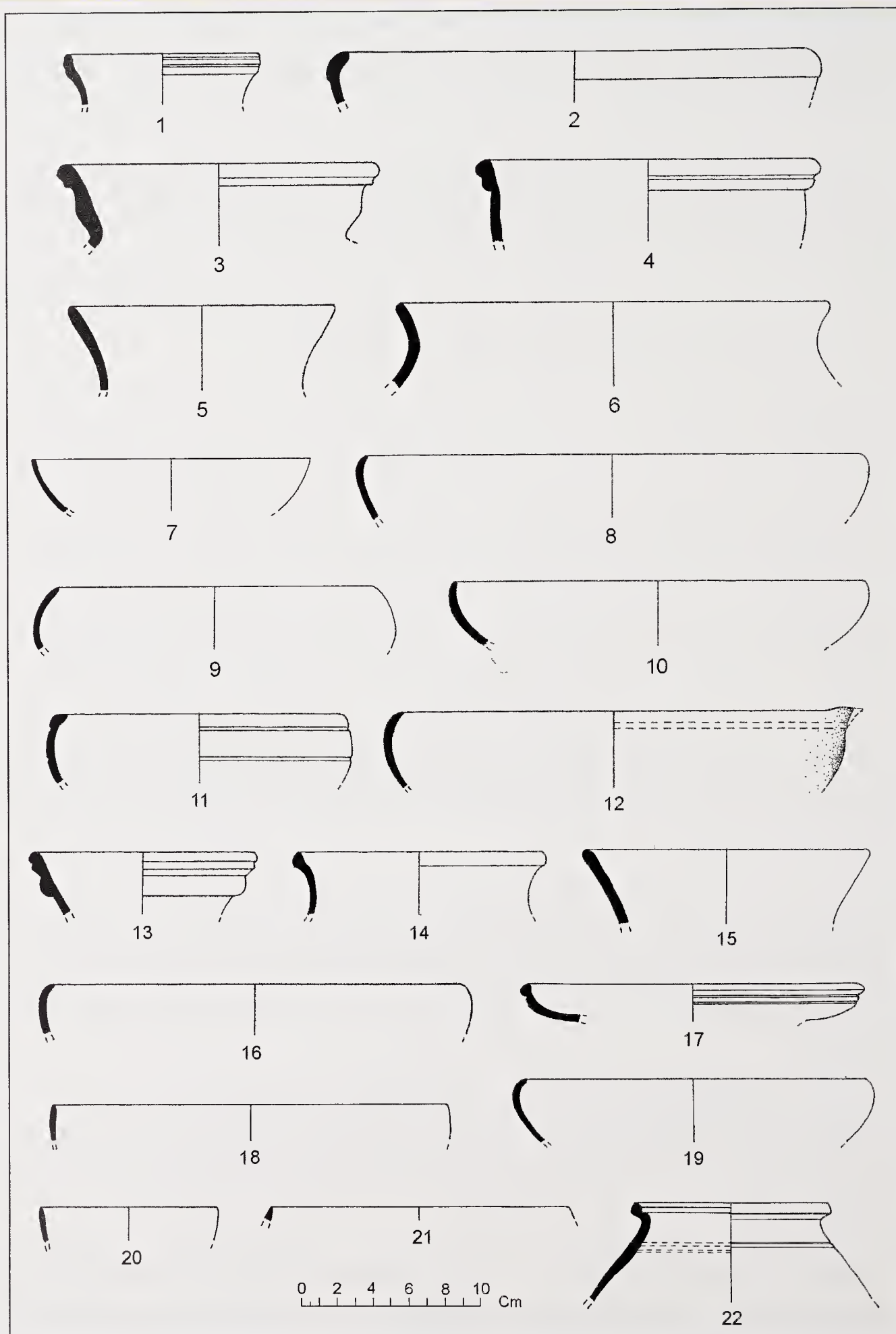



Fig. 16 Red ware, Period I.

7. Fragment of a bowl of red ware: square-cut vertical rim, convex sides; fine fabric, well fired, thin red core, faint remains of a light-red slip. ALB-3, Sq A1, Qd1, Layer 4. Period I.

8. Fragment of a dish of red ware: somewhat sharp-edged incurved rim, convex sides; fine fabric, well fired, greyish red thin core, very faint remains of a red slip. ALB-1, Pegs 0-1, Layer 4. Period I.

9. Fragment of a dish of red ware: somewhat sharp-edged incurved rim, convex sides; fine fabric, well fired, dull red core. ALB-3, Sq A1, Qd 1, Layer 4. Period I.

10. Fragment of a dish of red ware: somewhat sharp-edged incurved rim, convex sides; fine fabric, well fired, thin red core, faint remains of a red slip. ALB-1, Pegs 0–I, Layer 4. Period I.

11. Fragment of a bowl of red ware: internally beaked rim, externally grooved convex sides; medium fabric, well fired, thin red core. ALB-3, Sq A2, Qd1, Layer 4. Period I.

12. Fragment of a lipped bowl of red ware: sharp-edged incurved rim with a lip, convex sides; fine fabric, well fired, though smoky grey thin core, faint remains of a red slip. ALB-3, Sq A2, Qd1, Layer 4. Period I.

13. Rim-fragment of a vase of red ware: externally grooved rim, with a bulge below it; medium fabric, well fired, dull red core, faint remains of a red slip. ALB-1, Pegs I-V, Layer 4. Period I.

14. Rim-fragment of a vase of red ware: short-collared slightly out-turned rim with a mild depression on the interior, concave neck; fine fabric, well fried, dull red core. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

15. Fragment of the rim of a vase of red ware: flared-out rim; medium fabric, well fired, red core, faint remains of a red slip on the exterior. ALB-1, Pegs 0–I, Layer 4. Period I.

16. Fragment of a dish of red ware: sharp-edged incurved rim, mildly convex sides; fine fabric, well fired, thin red core, remains of a red slip. ALB-3, Sq A2, Qd1, Layer 4. Period I.

17. Fragment of a shallow dish of red ware: collared rim with a groove below it, tapering sides; medium fabric, well fired, red core, treated with a red slip. ALB-1, Pegs I-V, Layer 6, Period I.

18. Fragment of a dish of red ware: sharp-edged vertical rim, mildly convex sides; fine fabric, well fired, thin red core, treated with a fine red slip. ALB-1, Pegs III-IV, Layer 5, Period I.

19. Fragment of a dish of red ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, red core, treated with a red slip. ALB-1, Pegs III-IV, Layer 4. Period I.

20. Fragment of a bowl of red ware: sharp-edged vertical rim, tapering sides; fine fabric, well fired, thin red core, treated with a fine red slip. ALB-3, Sq A2, Qd1, Layer 4. Period I.

21. Fragment of a dish of red ware: sharp-edged incurved rim, convex sides; fine fabric, well fired, red core, treated with a fine red slip. ALB-1, Pegs III-V, Layer 4. Period I.

22. Fragment of a vase of red ware: slightly out-turned, short rim with a deep groove on the interior probably for keeping a lid, short concave neck, oblique shoulder with a groove; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq A2, Qd1, Layer 4. Period I.

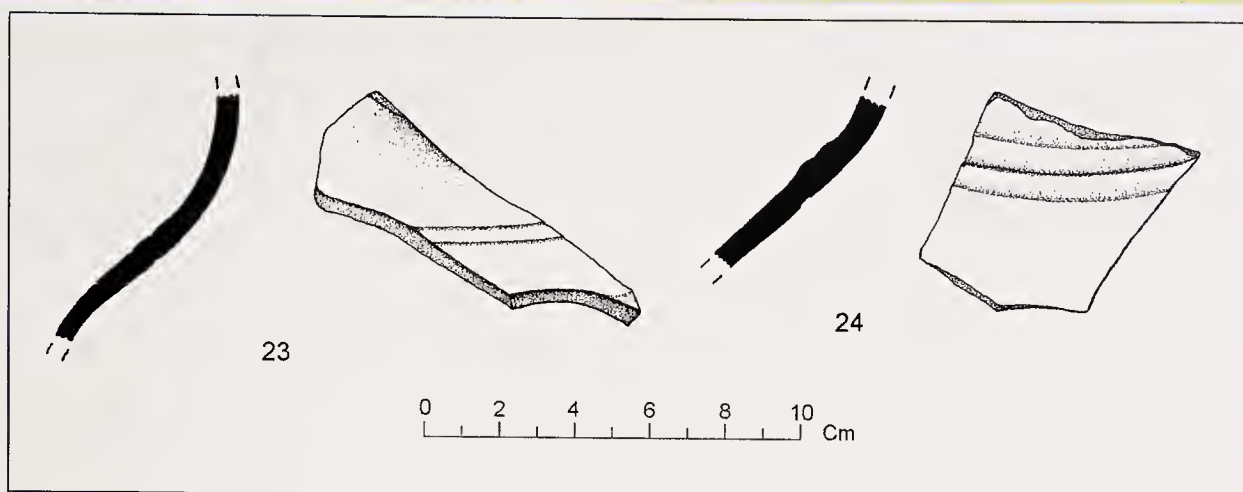



Fig. 17 Fragments of ribbed vases of red ware, Period I.

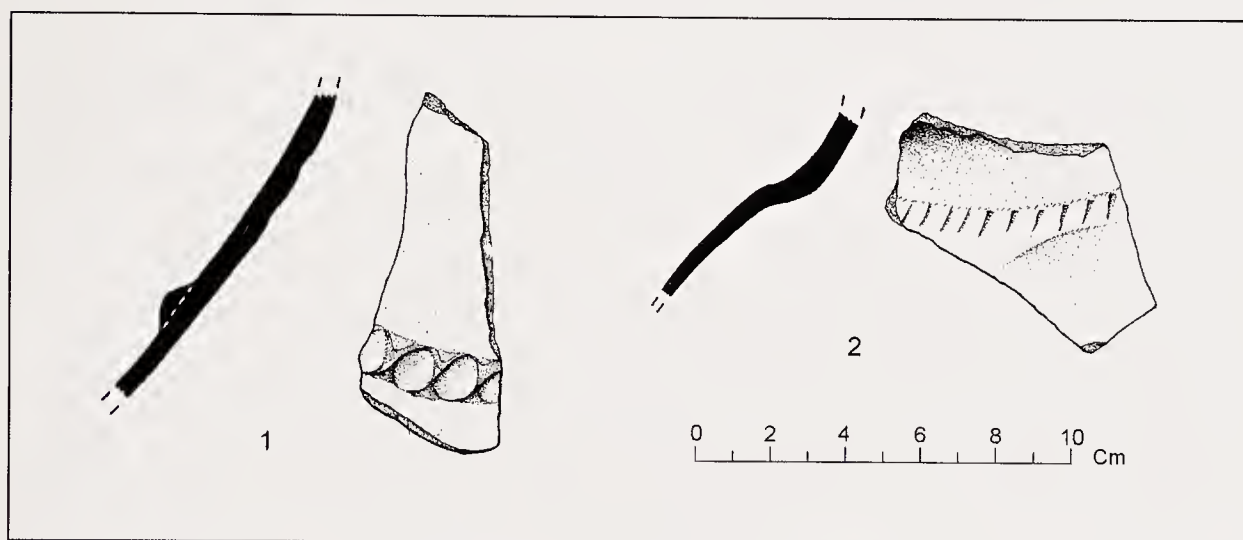



Fig. 18 Decorated red ware, Period I.

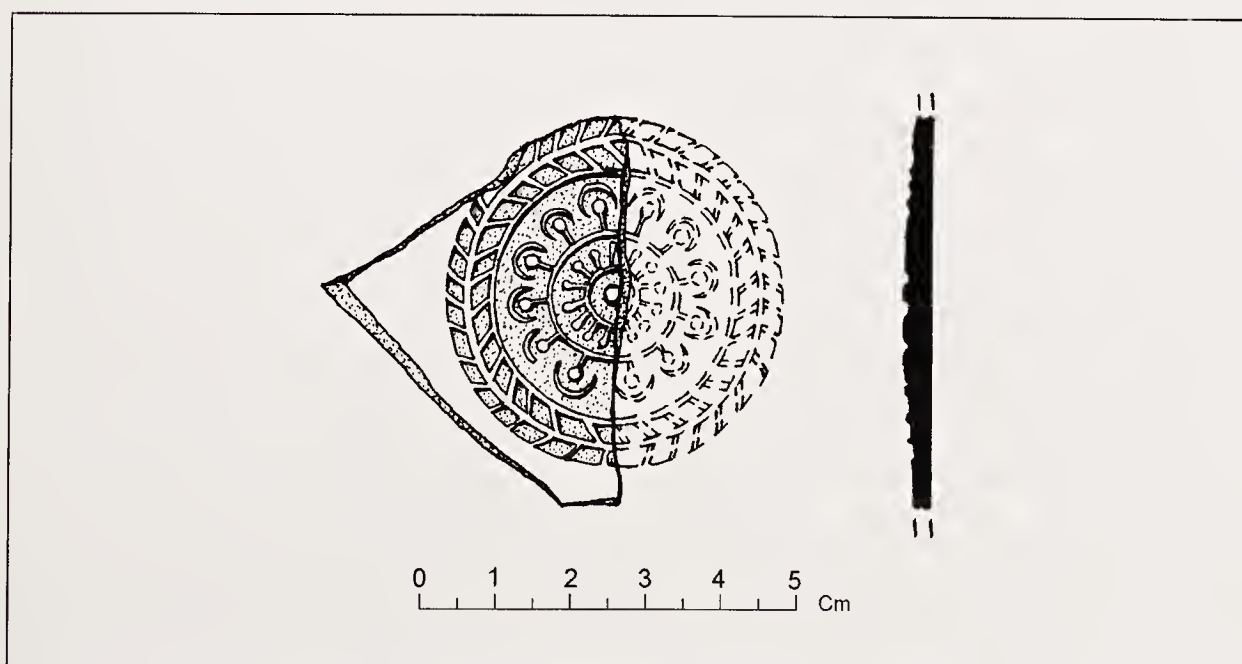



Fig. 19 Stamped black-slipped ware, Period I.

Pl. XVII Decorated red ware, Period I.

Pl. XVIII Stamped black-slipped ware, Period I.

Fig. 17

23. Shoulder-fragment of a vase of red ware: along the shoulder there runs a rib; medium fabric, well fired, greyish red core, faint traces of a red slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

24. Shoulder-fragment of a vase of red ware: along the shoulder there are two ribs; medium fabric, well fired, greyish red core, faint traces of a red slip. ALB-3, Sq A2, Qd 1, Layer 4. Period I.

DECORATED POTTERY

Red ware (Fig. 18 and Pl. XVII)

1. Shoulder-fragment of a vase of red ware: along the shoulder there runs a design of thumb-depression on an applique band; medium fabric, well fired, dull red core, traces of a red slip. ALB-3, Pegs 0-1, Layer 4. Period I.

2. Shoulder-fragment of a vase of red ware: it is decorated with oblique notched strokes around the neck; medium fabric, well fired, red core, traces of a red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 4A. Period I.

Black-slipped ware (Fig. 19 and Pl. XVIII)

Part of a dish of black–slipped ware: it has a stamped decoration in relief at the centre of the base on interior. The design runs in four principal concentric circles. It starts with a central pellet in a sun-like motif having probably 14-16 rays of which 8 are now intact. In the next circle there are remains of a motif with radiating lines ending in a pallet and capped by a curve. This is separated by another circle which carries equidistantly placed oblique strokes. The design ends with the outer circle which also consists of oblique strokes in a similar manner, but in opposite direction. Fine fabric, well fired, dark grey core, treated with a black slip. ALB-1, Pegs O - I, Layer 4. Period I.

PERIOD II

The pottery of Period II is represented entirely by red ware, plain as well as decorated. All the examples are wheel-turned, well fired and made of medium-to-fine-grained clay. A few odd examples of storage jars and basins are made of coarse-grained clay and are not so well fired. The shapes include medium-to-small-sized bowls with footed base; large-to-medium-sized bowls with corrugated, tapering profile; lids with centrally placed button-shaped knob; sprinklers with small conical opening; medium-sized, long-necked vases, etc. Besides, basins, *hāṇḍī*s, frying pans, lamps, spouted vessels, etc. also occur during this Period.

The diameters and heights of the footed-base bowls vary from 7 to 10 cm and 5 to 6 cm respectively. The large-to-medium-sized bowls having tapering sides and string-cut base are encountered in large quantity at the site. The diameters and heights of these bowls vary from 15 to 21 cm and 8 to 10 cm respectively. May be, the large-sized bowls were used for temporarily storing cooked food. All these bowls are devoid of any surface treatment. The sprinklers have a long bottle-neck with a flanged top and a small conical or truncated pin-holed opening. All the sprinkler bear a bright red slip. In the case of the basins, these usually have a slip on the interior and the rim, but not on the exterior.

Mainly, two types of decoration are present on the pottery, viz. incised and stamped. Painted decoration is absent. Incised designs are executed before firing as well as after firing. These consist of wavy lines, horizontal bands, notched decorations, groups of oblique lines, etc. Post-firing designs consist of hatched triangles and floral patterns.

Stamped decorations include floral and chequer patterns. Some of the stamped designs are in low relief and have a special treatment of mica-dusting.

Selected examples are given below:

Bowls (Figs. 20 and 21)

1. Medium-sized bowl of red ware: internally bevelled rim, tapering sides, string-cut footed base; medium fabric, well fired, red core. ALB-3, Sq ZB1, Qd 4, Layer 3A. Sub-period IIA.

2. Medium-sized bowl of red ware: sharp-edged rim, tapering sides with smooth and round interior, string-cut disc-base; medium fabric, dull-red core. ALB-3, Sq ZB2, Qd 4, Layer 2. Sub-period IIB.

3. Medium-sized bowl of red ware: externally and internally bevelled sharp-edged rim, tapering sides, string-cut flat base; medium fabric, well fired, dull-red core. ALB-3, Sq ZB1, Qd 4, Layer 3. Sub-period IIA.

4. Small-sized bowl of red ware: internally sharpened vertical rim, tapering sides, string-cut footed base; fine fabric, well fired, red core. ALB-3, Sq A1, Qd 4, Layer 2. Sub-period IIB.

5. Small-sized bowl of red ware: internally bevelled sharp-edged rim, tapering sides, string-cut footed base; medium fabric, well fired, dull red core. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

6. Bowl of red ware: externally oblique-cut rim, uneven profile, string-cut footed base; medium fabric, well fired, dull red core, faint remains of a red slip on the exterior. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

7. Part of a shallow bowl of red ware: sharp-edged rim, tapering sides with a groove line at the middle on the interior; fine fabric, well fired, thin red core, light brown slip on the interior and on the rim on the exterior. ALB-3, Sq ZB1, Qd 1, Layer 1A. Sub-period IIB.

8. Part of a shallow bowl of red ware: featureless rim, tapering sides with mild carination below the rim; fine fabric, well fired, red core, red-slipped. ALB-3, Sq ZB1, Qd 4, Layer 1A. Sub-period IIB.

9. Part of a medium-sized deep bowl of red ware: out-turned externally oblique-cut rim, almost straight sides with grooved exterior; medium fabric, well fired, red core. ALB-3, Sq A1, Qd 1, Layer 2B. Sub-period IIB.

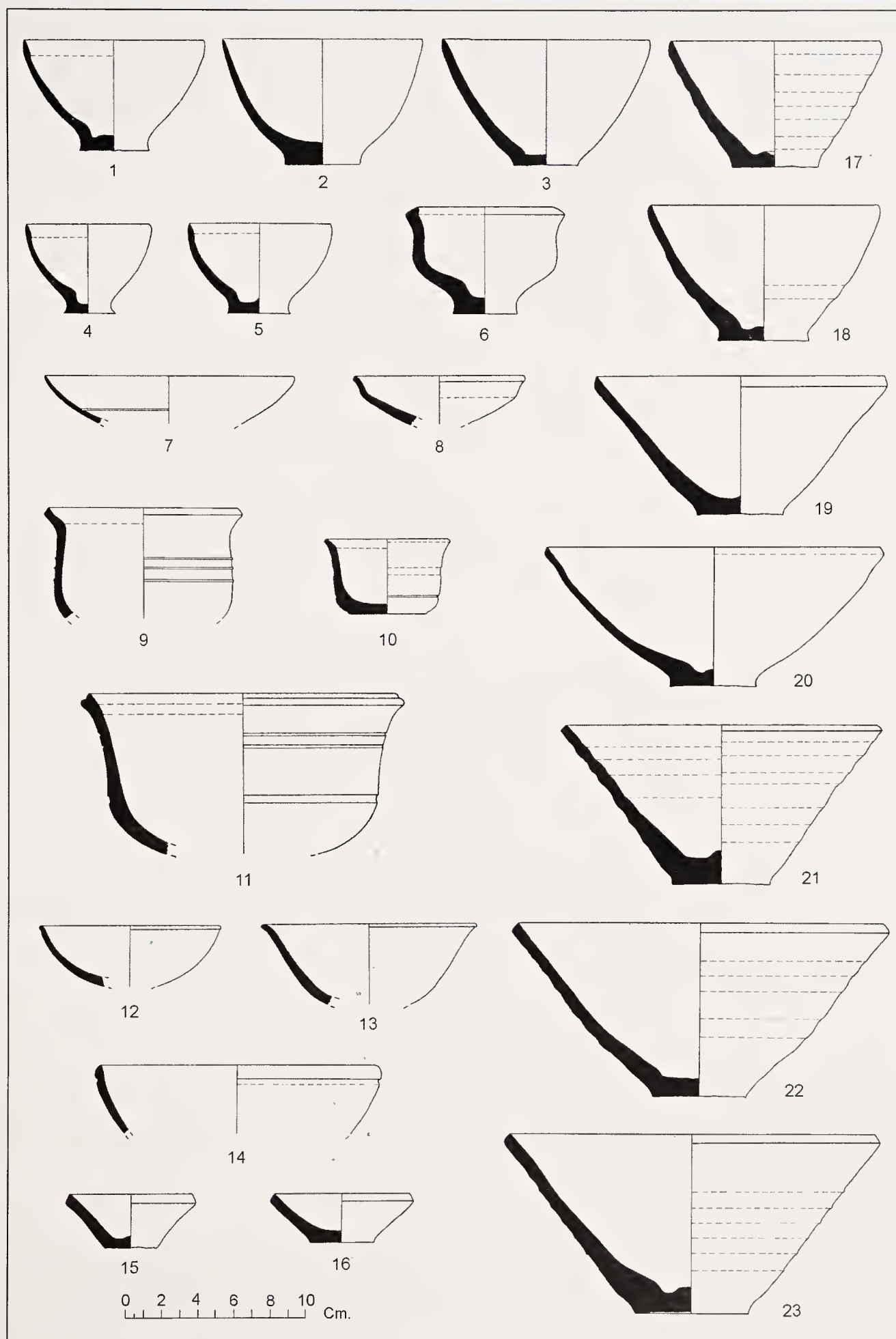



Fig. 20 Bowls of red ware, Period II.

10. Small-sized bowl of red ware: slightly out-turned rim, almost straight sides with grooved exterior, large flat base; medium fabric, not so well fired, smoky core, fine red slip. ALB-3, Sq ZB1, Qd 1, Layer 1A. Sub-period IIB.

11. Part of a large-sized bowl/basin of red ware: slightly out-turned and externally oblique-cut grooved rim, grooved concave sides turning inward probably for a round base; medium fabric, well fired, red core, red slip. ALB-3, Unstratified.

12. Part of a shallow bowl of red ware: featureless rim, convex sides; fine fabric, well fired, thin red core, red slip. ALB-3, Sq A1, Qd 1, Layer 2A. Sub-period IIB.

13. Part of a medium-sized bowl of red ware: slightly splayed-out sharp rim, tapering sides; fine fabric, well fired, red core, red slip. ALB-3, Sq B1, Qds 3 & 4, Layer 3. Sub-period IIA.

14. Part of a bowl of red ware: externally bevelled rim with a groove below it on the exterior, tapering sides; fine fabric, well fired, red core, fine red slip. ALB-3, Sq A1, Qd 1, Layer 2A. Sub-period IIB.

15. Small bowl of red ware: externally oblique-cut rim with evidence of soot-marks, which suggest that it might have been used as a lamp, tapering sides, string-cut flat base; medium fabric, well fired. ALB-3, Sq YB1, Qd 2, Layer 3. Sub-period IIA.

16. Small bowl of red ware: externally oblique-cut rim with the remains of soot-marks, which suggest that it might have been used as a lamp, tapering sides, string-cut flat base; medium fabric, well fired, dull red core. ALB-3, Sq A1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

17. Medium-sized bowl of red ware: externally mildly bevelled rim, tapering sides with externally corrugated profile, string-cut disc-base; medium fabric, well fired, red core. ALB-3, Sq B1, Qds 1 and 2, Pit 6, sealed by Layer 3A. Sub-period IIA.

18. Medium-sized bowl of red ware: externally mildly bevelled rim, tapering sides with corrugated profile, string-cut disc-base; medium fabric, well fired, dull red core. ALB-3, Sq B1, Qds 3 and 4, Layer 2. Sub-period IIB.

19. Medium-sized bowl of red ware: externally oblique-cut rim, tapering sides, string-cut flat base; medium fabric, well fired, red core. Comparatively larger than Sr. No. 18. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

20. Large-sized bowl of red ware: less sharp-edged rim, smooth tapering sides, string-cut disc-base; fine fabric, well fired, red core. ALB-3, Sq A1, Qd 1, Layer 2. Sub-period IIB.

21. Large-sized bowl of red ware:, externally oblique-cut rim, tapering sides with corrugated profile, string-cut flat base; medium fabric, well fired. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

22. Large-sized bowl of red ware:, externally oblique-cut rim, tapering sides with corrugated profile, string-cut-disc-base; medium fabric, well fired. ALB-3, Sq B1, Qd 3 and 4, Pit x sealed by Layer 3. Sub-period IIA.

23. Large-sized bowl of red ware: externally oblique-cut rim, tapering sides with mildly corrugated profile, string-cut flat base; medium fabric, well fired. ALB-3, Sq ZB1, Qd 4, Layer 3A. Sub-period IIA.

24. Part of a bowl of red ware: slightly out-turned featureless rim, tapering sides with a groove; medium fabric, not so well fired, black core, red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 6 sealed by Layer 3. Sub-period IIA.

25. Part of a bowl of red ware: featureless rim with a groove below it on the exterior, tapering sides; medium fabric, well fired, red core, red slip. ALB-3, Sq ZB1, Qd 4, Layer 1A. Sub-period IIB.

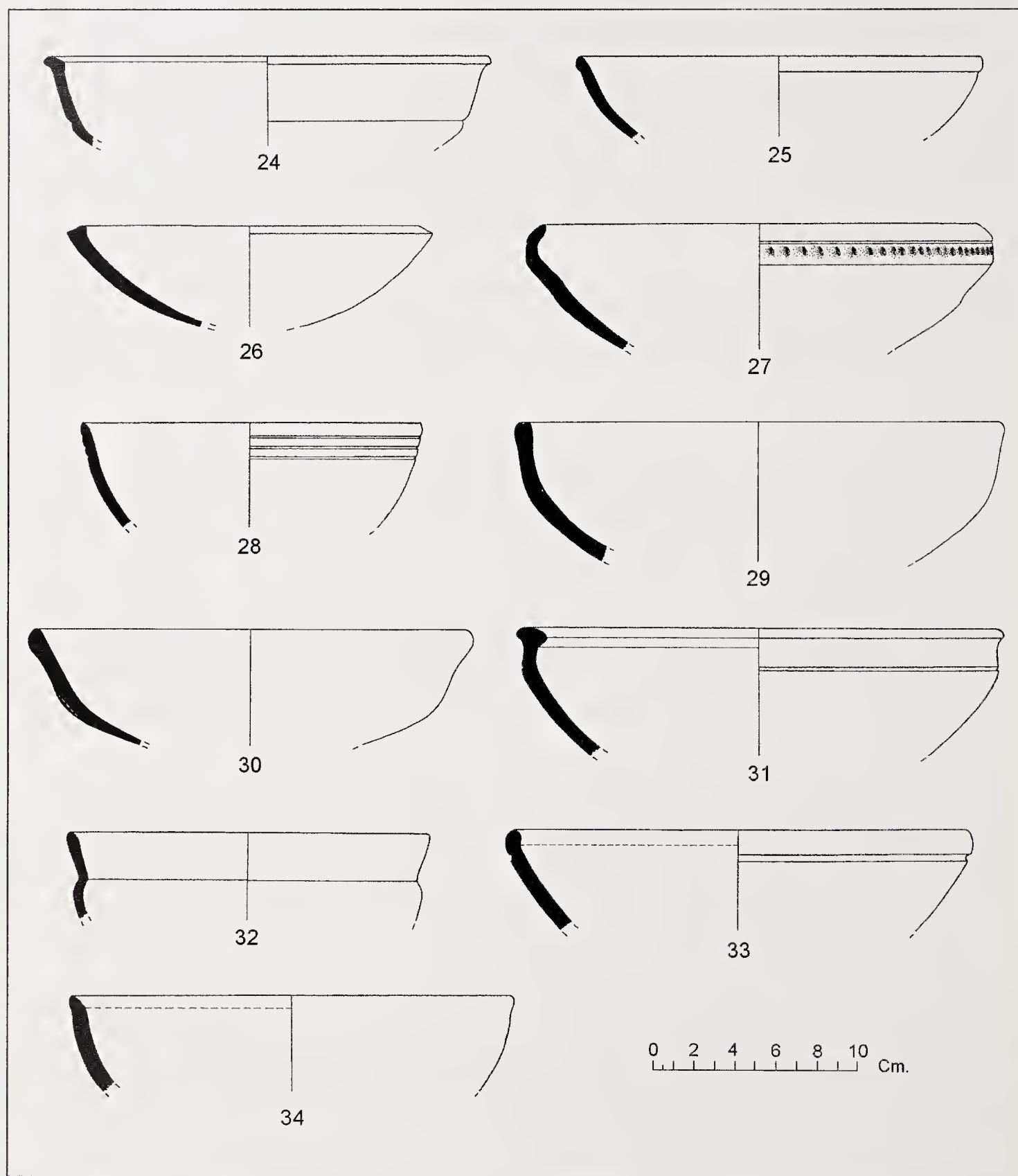



Fig. 21 Bowls of red ware, Period II.

26. Part of a bowl of red ware:, externally oblique-cut rim, tapering sides; medium fabric, well fired but blackish core, red slip. ALB-3, Sq B1, Qds 1 and 3, Pit 5 sealed by Layer 3A. Sub-period IIA.

27. Part of a basin/bowl of red ware: incurved rim having a thumb-depression on the interior, decorated with a running line of notches below a groove on the exterior, tapering sides; medium fabric, well fired but black core, red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 1A. Sub-period IIB.

28. Part of a bowl of red ware: internally bevelled rim with a group of multiple grooved lines on the exterior, tapering sides; medium fabric, well fired, red core, red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 3. Sub-period IIA.

29. Part of a bowl of red ware: mildly grooved-topped vertical rim, tapering sides; medium fabric, well fired, thick red core, faint remains of a red slip. ALB-3, Sq A1, Qd 1, Layer 2B. Sub-period IIB.

30. Fragment of a bowl/pan of red ware: round-topped rim, tapering sides with remains of burnt mud paste on the exterior, medium fabric, well fired, red core, red slip on the interior. ALB-3, Sq B1, Qds 1 and 3. Unstratified.

31. Part of a bowl of red ware: inturned nail-headed rim, tapering sides; medium fabric, well fired, smoky red core, red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 2. Sub-period IIB.

32. Part of a bowl of red ware: featureless rim, tapering-cum-ledged sides; fine fabric, well fired, red core, red slip. ALB-3, Sq A1, Qds 1 and 4, Layer 1A. Sub-period IIB.

33. Part of a bowl of red ware: featureless rim with a deeply groove line below it on the exterior, tapering sides; medium fabric, well fired, red core. ALB-3, Sq B1, Qds 1 and 2, Layer 2. Sub-period IIB.

34. Part of a large-sized bowl of red ware: internally bevelled rim, tapering sides; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

Lids-cum-bowls and Lids (Fig. 22)

1. Part of a lid-cum-bowl of red ware: slightly splayed-out rim with a rib on the interior, tapering sides; medium fabric, well fired, red core, red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 1A. Sub-period IIB.

2. Part of a lid-cum-bowl of red ware: slightly splayed-out rim with a ledge on the interior, tapering sides with a grooved interior; medium fabric, well fired, dull red core, remains of a red slip. ALB-3, Sq A1, Qd 1, Layer 3. Sub-period IIA.

3. Part of a lid-cum-bowl of red ware: slightly-splayed-out rim with a ledge on the interior, tapering sides, flat base; medium fabric, not so well fired, smoky grey core, red slip. ALB-3, Sq B1, Qd 1, Layer 2B. Sub-period IIB.

4. Part of a lid-cum-bowl of red ware: slightly splayed-out rim with a ledge on the interior, tapering sides with grooved interior, flat base; medium fabric, well fired, red core, red slip. ALB-3, Sq ZB1, Qd 4, Layer 1. Sub-period IIB.

5. Part of a bowl of red ware: out-turned rim, tapering sides; medium fabric, well fired, red core, remains of a red slip. ALB-3, Sq XA1, Qd 1. Unstratified.

6. Part of a lid-cum-bowl of grey ware: out-turned rim with a running notched decoration below it on the interior, tapering sides; medium fabric, well fired, grey core, treated with a dark grey slip on the interior. ALB-3, Sq ZB1, Qd 4, Layer 1A. Sub-period IIB.

7. Fragment of a lid-cum-bowl of red ware: flared-out rim decorated with a notched-running line with a ledge on the interior, tapering sides; medium fabric, well fired, red core, treated with a fine red slip. ALB-3, Sq B1, Qds 3 & 4, Layer 1A. Sub-period IIB.

8. Part of a lid of red ware: externally oblique-cut rim, tapering sides, centrally placed button-shaped knob, disc-base; medium fabric, well fired, smoky red core, faint remains of a red slip. ALB-1, Sq A1, Qd 1, Layer 2A. Sub-period IIB.

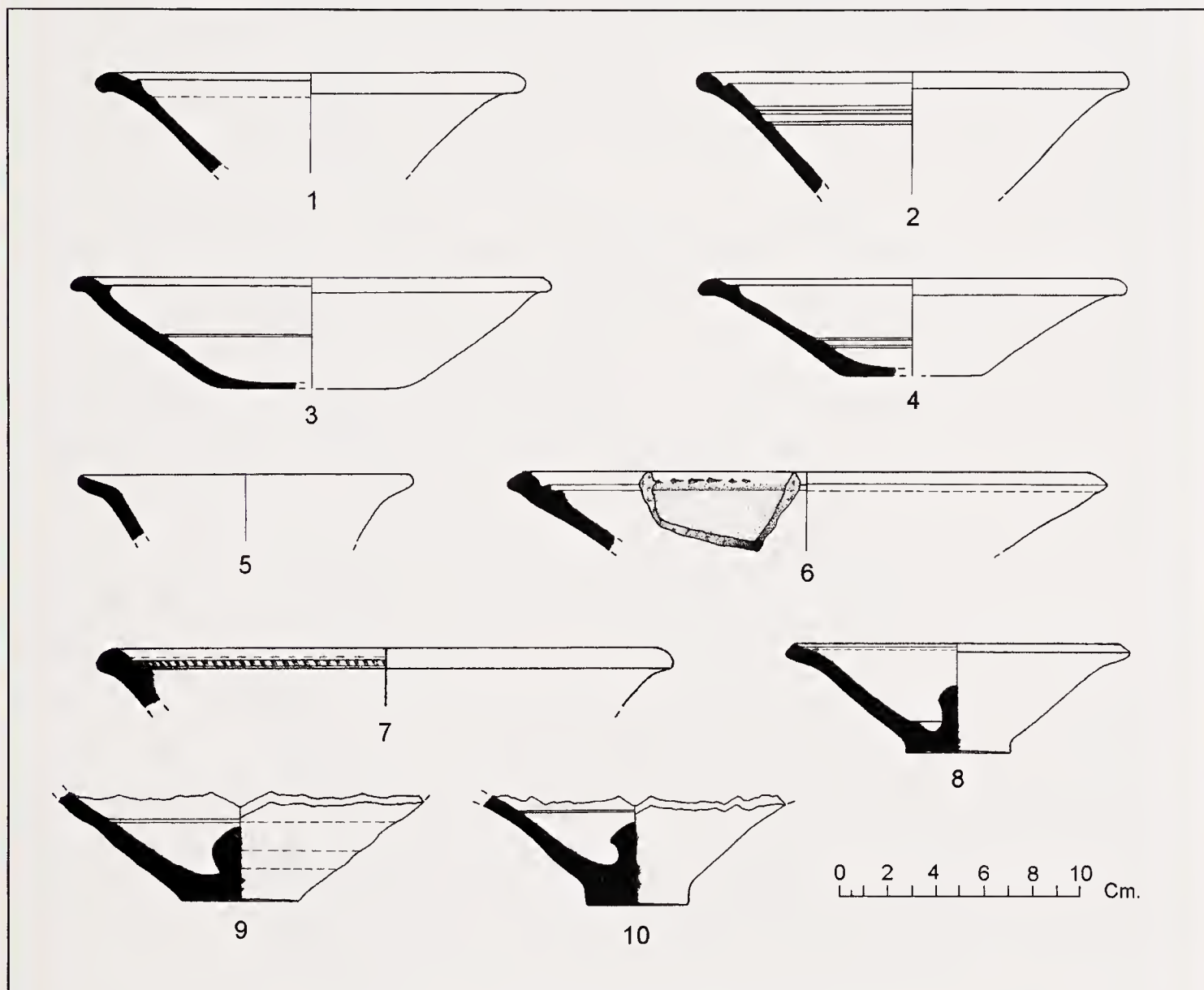



Fig. 22 Lid-cum-bowls and lids of red ware, Period II.

9. Part of a lid of red ware: tapering sides, centrally placed button-shaped knob on the interior, flat-base; medium fabric, well fired, red core, faint remains of a red slip. ALB-3. Unstratified.

10. Part of a lid of red ware: tapering sides, centrally placed button-shaped knob on the interior, disc-base; medium fabric, well fired, dull red core. ALB-3, Sq A1, Qd 1, Layer 2B. Sub-period IIB.

Basins (Figs. 23-26)

1. Part of a basin of red ware: externally collared rim, convex sides, medium fabric, well fired, red core, red slip. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

2. Part of a basin of red ware: externally grooved collared rim, convex sides; medium fabric, well fired, smoky core, red slip. ALB-3, Sq B1, Qds 3 & 4, Layer 1A. Sub-period IIB.

3. Part of a basin of red ware: internally beaked and externally grooved rim, tapering sides; medium fabric, well fired, red core, red slip. ALB-3, Sq A2, Qd 4, Layer 2. Sub-period IIB.

4. Part of a basin of red ware: flat rim, tapering sides turned inside towards a base, with evidence of soot marks on the exterior; medium fabric, well fired. ALB-3, Sq A1, Qds 1 and 2, Pit 4 sealed by Layer 1. Sub-period IIB.

5. Part of a basin/vase of red ware: internally beaked rim, externally grooved tapering sides, remains of a smoky black surface or soot marks on the interior, medium fabric, not so well fired, smoky core, light red slip. ALB-3, Sq A1, Qd 1, Layer 1A. Sub-period IIB.

6. Part of a basin of red ware: externally beaked rim, grooves and carination lower down, tapering sides; medium fabric, well fired, red core, red slip. ALB-3, Sq XA1, Qd 1. Unstratified.

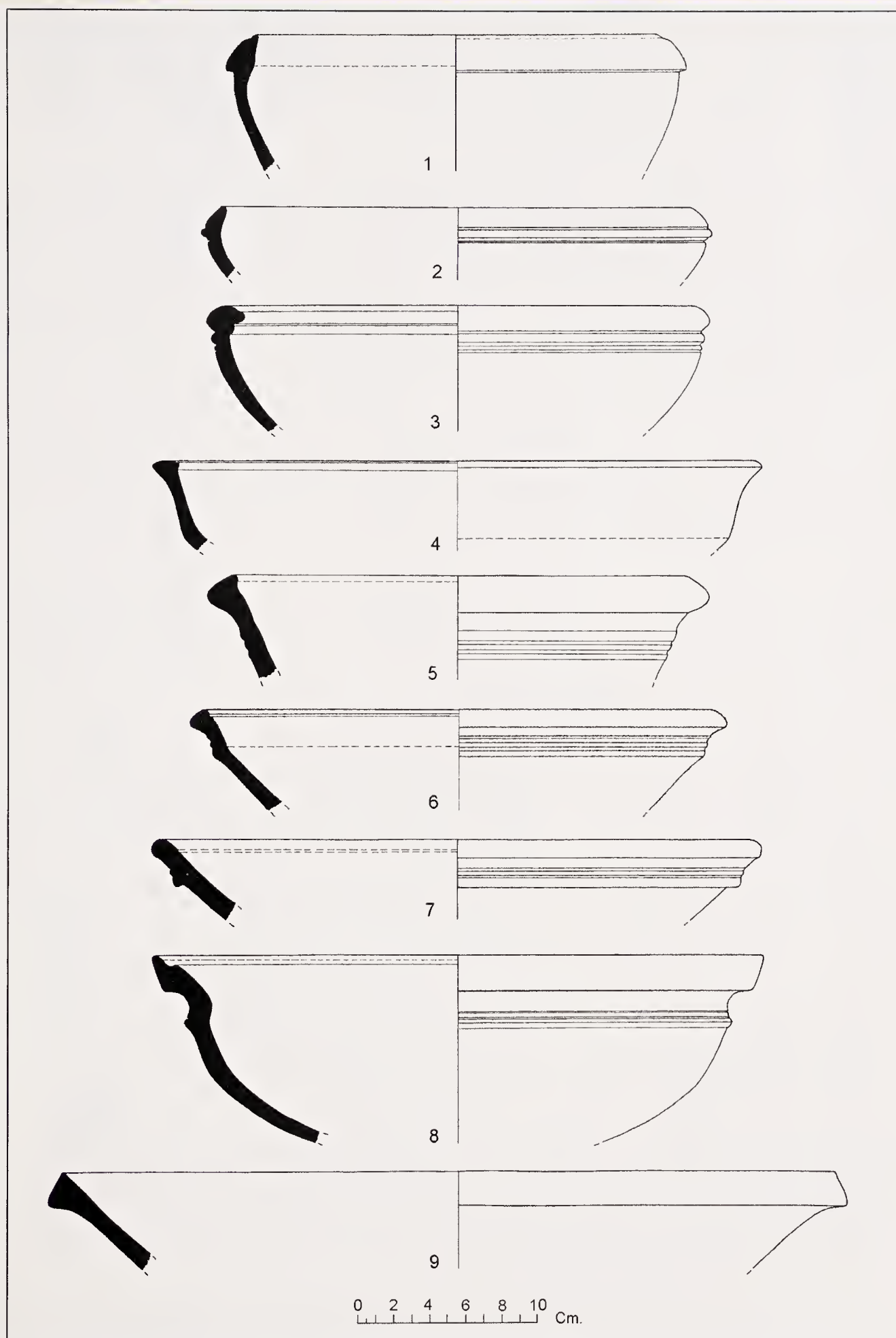



Fig. 23 Basins of red ware, Period II.

7. Part of a basin of red ware: rounded rim, grooves and ledge lower down, tapering sides; medium fabric, well fired, smoky red core, red slip. ALB-3, Sq B1, Qds 2 and 3, Layer 2. Sub-period IIB.

8. Part of a basin of red ware: slightly out-turned square-cut rim with a deep thumb depression below it on the exterior and a ledge on the interior, tapering sides; medium fabric, well fired, red core, red slip on the interior and on the upper part of the exterior. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

9. Part of a basin of red ware: externally beaked rim, tapering sides; medium fabric, well fired, red core, red slip on the interior as well as on the rim. ALB-3, Sq ZB1, Qd 4, Layer 1A. Sub-period IIB.

10. Part of a basin of red ware: flaring-out featureless rim, tapering sides with grooves on the exterior; medium fabric, well fired, smoky core, faint remains of a red slip. ALB-3, Sq YC1, Qd 2, Layer 2. Sub-period IIB.

11. Part of a basin of red ware: horizontally splayed out and grooved rim, convex sides with grooved exterior; medium fabric, well fired, red core, red slip on the interior as well as on the rim. ALB-3, Sq B1, Qds 1 and 2, Layer 3. Sub-period IIA.

12. Part of a basin of red ware: incurved but externally thickened and grooved rim, tapering sides; medium fabric, well fired, smoky core, red slip on the interior as well as on the rim. ALB-3, Sq XA1, Qd 1, Layer 2. Sub-period IIB.

13. Part of a basin of red ware: externally prominently collared rim, convex sides; coarse fabric, ill fired, thick black core between dull red exterior, dull red slip on the interior as well as on the rim. ALB-3, Sq A1, Qd 1, Layer 2A. Sub-period IIB.

14. Part of a basin of red ware: nail-headed rim, tapering sides; coarse fabric, ill fired, smoky core. ALB-3, Sq YC1, Qd 1, Layer 3. Sub-period IIA.

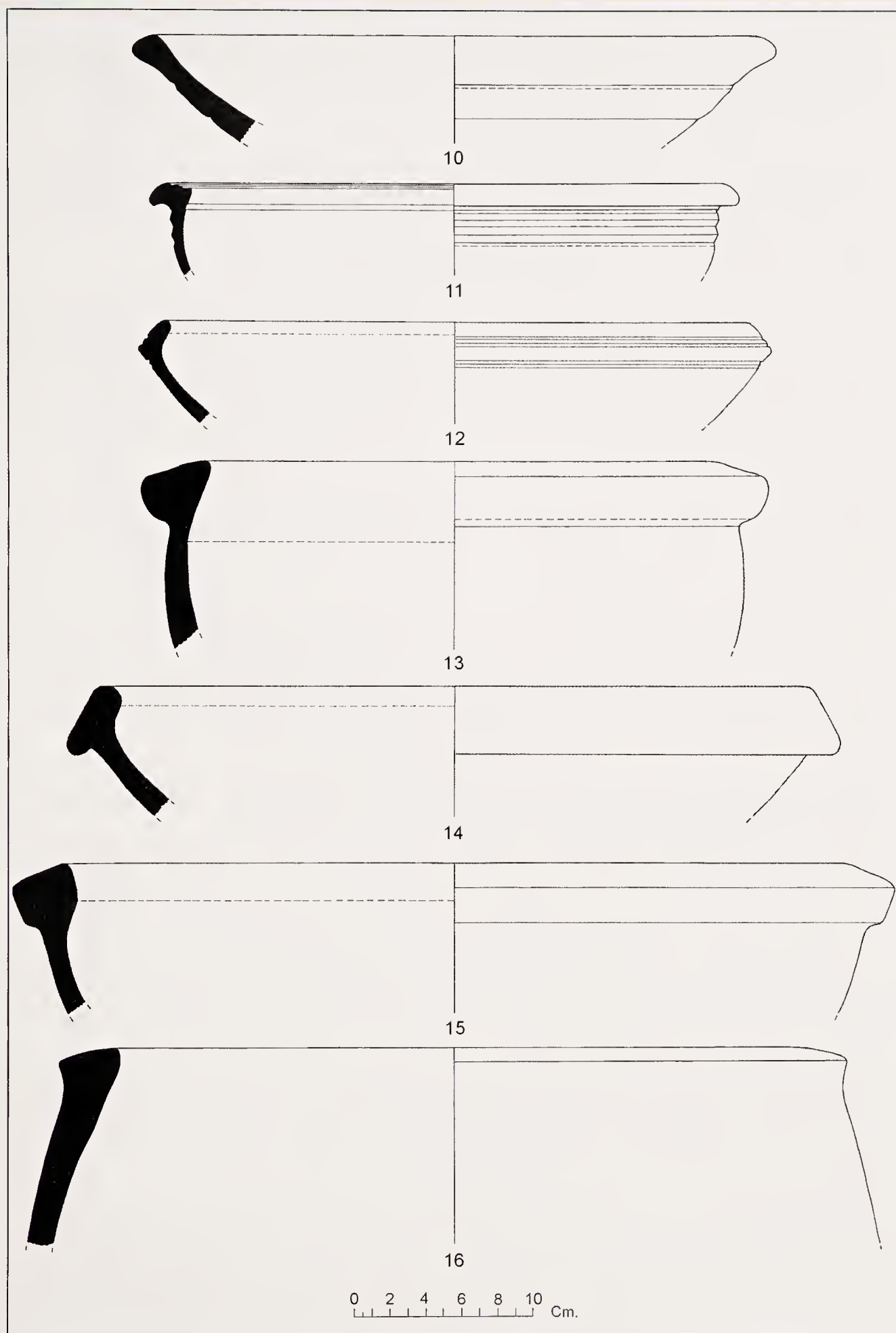



Fig. 24 Basins of red ware, Period II.

15. Part of a basin of red ware: almost nail-headed rim, convex sides; coarse fabric, ill fired, blackish core, red slip on the interior and on the rim. ALB-3, Sq A1, Qd 1, Layer 2A. Sub-period IIB.

16. Part of a basin of red ware: externally beaked rim, convex sides with roughened surface; coarse fabric, ill fired, thick granular blackish core, devoided of any slip treatment. ALB-3, Sq B1, Qd 1, Layer 3A. Sub-period IIA.

17. Part of a basin of red ware: beaked rim, convex sides; coarse fabric, ill fired, blackish core, soot-marks on the interior suggest that it may have been used as a *barosi* (a pot in which fire is kept for heating up). ALB-3, Sq A1, Qd 4, Layer 3A. Sub-period IIA.

18. Part of a basin of red ware: prominently collared rim, convexly tapering sides; coarse fabric, ill fired, black core, treated with a red slip on the interior and on the rim. ALB-3, Sq A1, Qd 1, Layer 2. Sub-period IIB.

19. Fragment of a large-sized basin of red ware: externally thickened, square-cut rim, small concave neck, mildly convex sides; coarse fabric, ill fired, thick granular smoky core, treated with a dark red slip. ALB-3, Sq ZB1, Qd 4, Layer 3A. Sub-period IIA.

20. Part of a basin/vase of red ware: closing-in rim, oblique sides; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq A1, Qd 4, layer 2. Sub-period IIB.

21. Part of a basin of red ware: grooved, closing-in rim, oblique sides; medium fabric, well fired, smoky core, dark red slip. ALB-3, Sq YB1, Qd 2, Layer 2. Sub-period IIB.

22. Part of a basin of red ware: square-cut closing-in rim, oblique sides; medium fabric, well fired, red core, treated with a red slip on the exterior and on the lip part on the interior. ALB-3, Sq B1, Qd 4, Layer 1A. Sub-period IIB.

23. Fragment of a basin of red ware: inturned thin collared rim, convex sides with a decorated band of notched triangles at the upper, medium fabric, well fired, red core, treated with a red slip on the exterior. ALB-3, Sq YC3, Qd 1, Pit 1 sealed by Layer 3. Sub-period IIA.

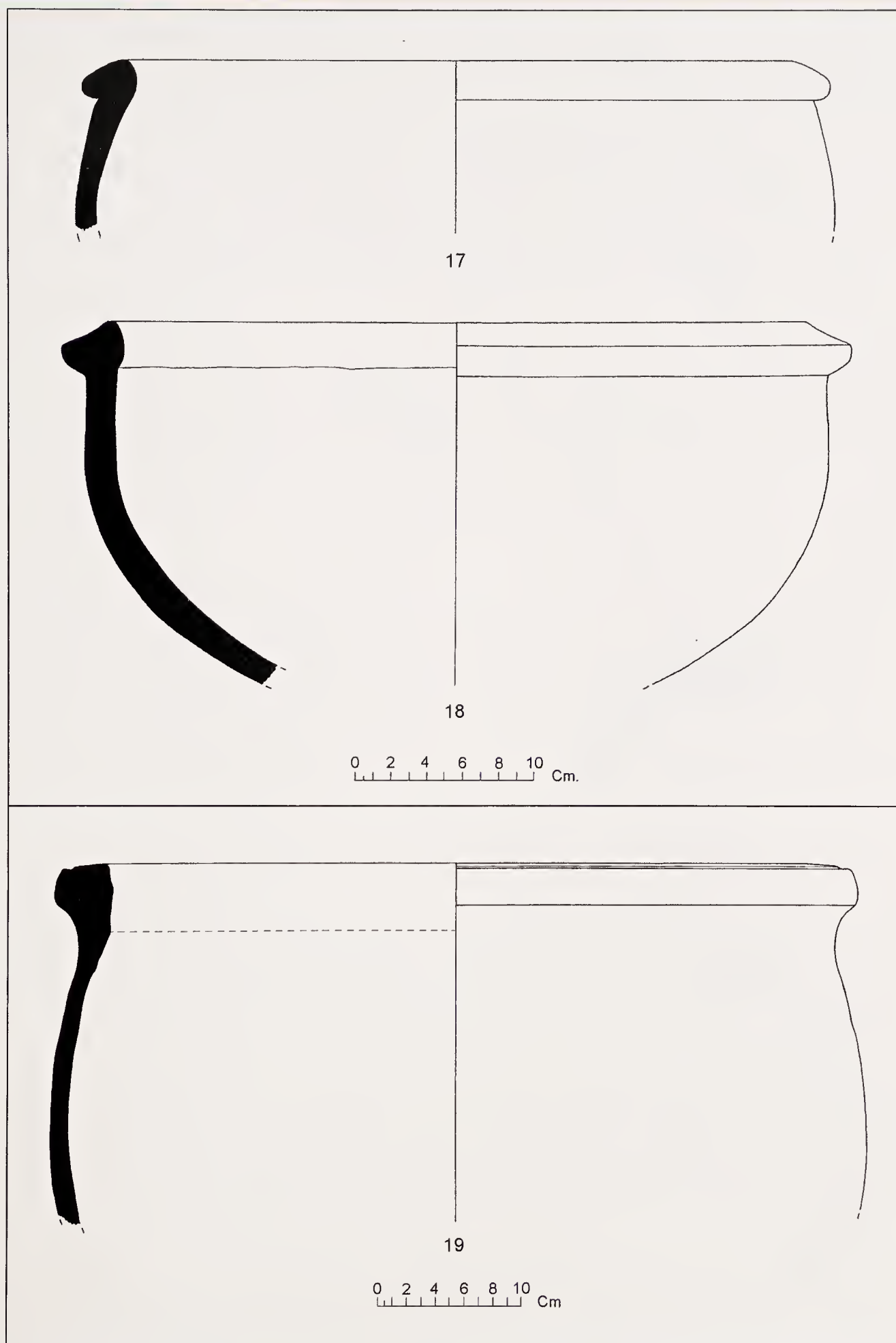



Fig. 25 Basins of red ware, Period II.

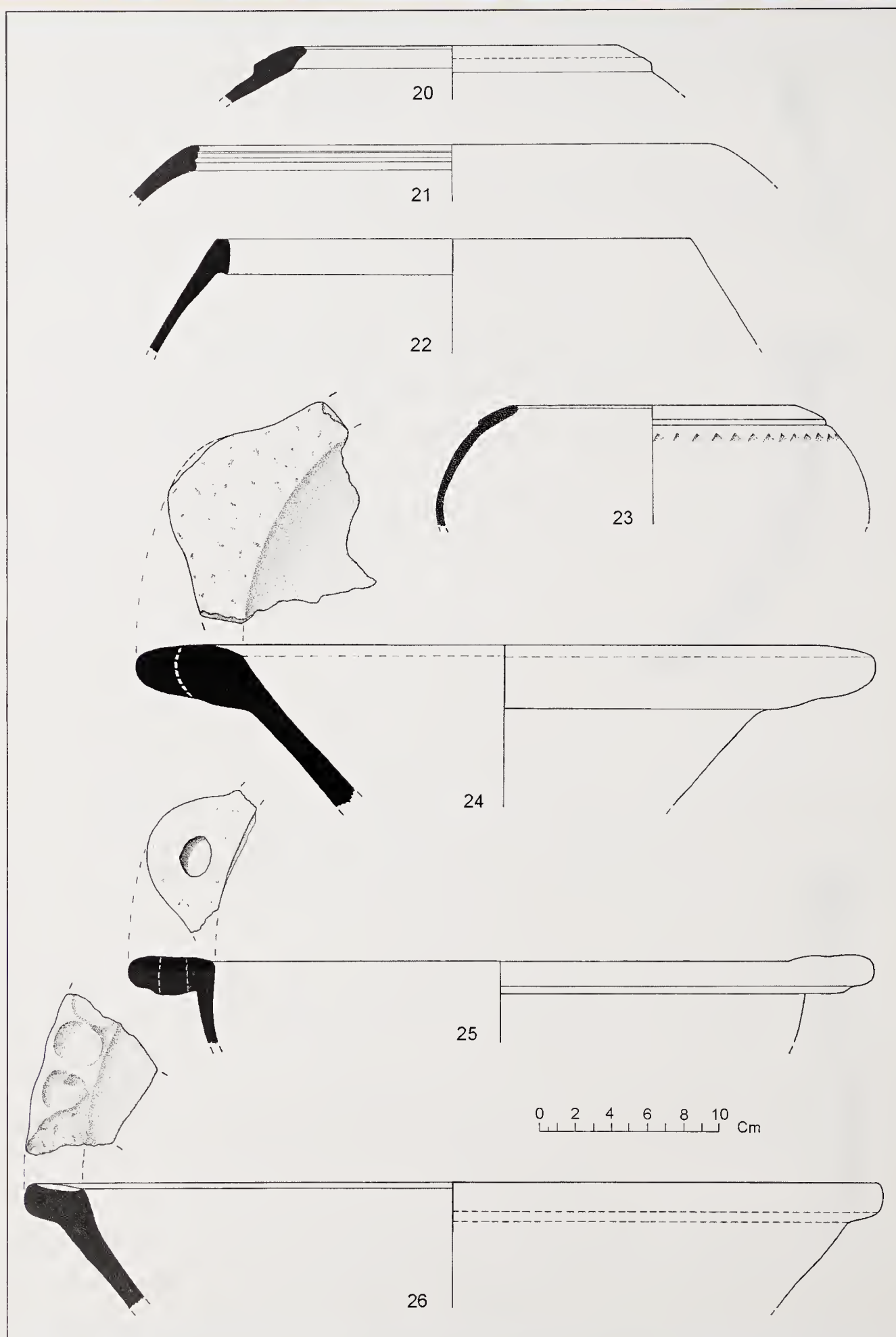



Fig. 26 Basins of red ware, Period II.

24. Part of a basin of red ware: featureless rim luted with a horizontally placed semi-circular lug handle, tapering sides; coarse fabric, ill fired, black core. ALB-3, Sq B1, Qds 3 & 4, Layer 2. Sub-period IIB.

25. Part of a basin of red ware: featureless rim luted with a horizontally placed loop handle, tapering sides; coarse fabric, well fired, smoky grey core. ALB-3, Sq B1, Qds 1 & 2, Layer 3. Sub-period IIA.

26. Part of a basin of red ware: horizontally splayed out rim decorated with a running design of thumb-impression at the top, tapering sides; coarse fabric, ill fired. ALB-3, Sq B1, Qds 3 & 4, Layer 2. Sub-period IIB.

Vases (Fig. 27-29)

1. Rim fragment of a vase of red ware: slightly out turned rim with a mild depression on the interior and grooves below it on the exterior, ledged neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Unstratified.

2. Rim fragment of a vase of red ware: flared out rim with a deep groove on the interior for keeping the lid, concave neck; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq B1, Qds 3 and 4, Layer 2. Sub-period IIB.

3. Rim fragment of a vase of black-slipped ware: internally bevelled flared out rim with a grooved exterior, concave neck; medium fabric, well fired, black core, treated with a black slip. ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A. Sub-period IIB.

4. Rim fragment of a vase of red ware: short out turned rim, straight neck with a convexity on the exterior; medium fabric, well fired, red core, remains of a red slip. ALB-3, Sq YA1, Qd 2, Layer 2. Sub-period IIB.

5. Rim fragment of a vase of red ware: prominently beaked and out-turned rim, grooved neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 3A. Sub-period IIA.

Fig. 27 Vases of red ware, Period II.

6. Rim fragment of a vase of red ware: slightly out turned somewhat beaked rim, concave neck; medium fabric, well fired, red core. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

7. Rim fragment of a vase of red ware: slightly out-turned nail-headed rim, concave neck; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq B1, Qd 1, Layer 2. Sub-period IIB.

8. Rim fragment of a vase of red ware: nail-headed straight rim, concave neck; medium fabric, well fired but smoky grey core. ALB-3, Sq B1, Qds 3 and 4, Pit 1 sealed by Layer 1A. Sub-period IIB.

9. Rim fragment of a vase of red ware: externally grooved and internally bevelled in-curved rim, concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

10. Rim fragment of a vase of red ware: square-cut flared-out rim, somewhat narrow, grooved neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 3. Sub-period IIA.

11. Rim fragment of a vase of red ware: out-turned beaked rim having a grooved top and decorated exterior with the notched vertical strokes on regular intervals, concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq ZB1, Qd 4, Layer 1A. Sub-period IIB.

12. Rim fragment of a vase of red ware: internally bevelled incurved rim decorated with a line made of notched vertical strokes on regular intervals similar to rope design; concave neck; medium fabric, well fired, red core, remains of a red slip. ALB-3, Sq B1, Qds 3 and 4, Layer 1A. Sub-period IIB.

13. Rim fragment of a vase of red ware: slightly incurved rim with a groove at the lower exterior, concave neck; medium fabric, well fired but smoky core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 5 sealed by Layer 3A. Sub-period IIA.

14. Rim fragment of a vase of red ware: out-turned beaked rim with a groove at the top, concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 2 sealed by Layer 3A. Sub-period IIA.

15. Rim fragment of a vase of red ware: flared out beaked rim decorated with a line made of notched vertical strokes on regular intervals on the exterior and grooved interior, long concave neck; medium fabric, well fired, red core, treated with a fine red slip. ALB-3, Sq ZB1, Qd 1, Layer 1A. Sub-period IIB.

16. Rim fragment of a vase of red ware: externally bevelled, slightly incurved rim with a groove on the exterior, concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qd 3, Pit 1 sealed by Layer 1. Sub-period IIB.

17. Fragment of a *hāṇḍī* of red ware: externally out-turned beaked rim with a groove on the exterior, short concave neck having a rib at the lower, shoulder with a groove at the upper; medium fabric, well fired, dull red core, red slipped on the exterior. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

18. Rim fragment of a vase of red ware: out-turned beaked rim with a grooved exterior, straight neck, grooved shoulder; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq A2, Qd 4, Layer 1. Sub-period IIB.

19. Fragment of a vase of red ware: internally bevelled almost vertical rim with a prominent-thumb depression on the interior and a grooved line on the exterior at the lower, concave neck, oblique shoulder; medium fabric, not so well fired, black core between the red, remains of a red slip on the exterior. ALB-3, Sq B1, Qds 1 & 2, Pit-4 sealed by Layer 2. Sub-period IIB.

20. Upper part of a vase of red ware: externally grooved short and out-turned rim mildly concave neck, oblique shoulder; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq YB1, Qd 2, Layer 2. Sub-period IIB.

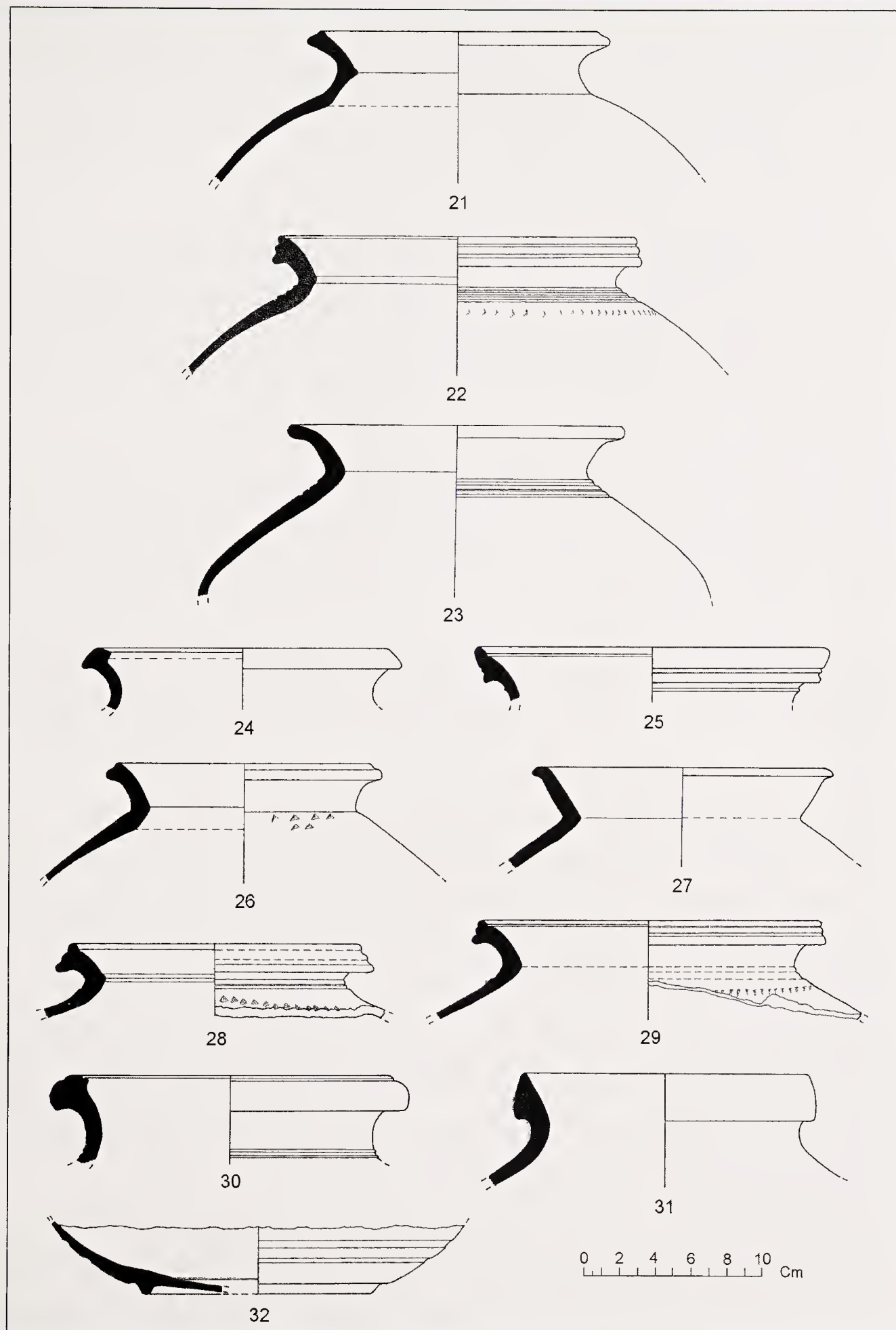



Fig. 28 Vases of red ware, Period II.

21. Fragment of a vase of red ware: out-turned beaked rim, short concave neck with carinated interior, oblique shoulder; medium fabric, well fired, red core, treated with a fine red slip on the exterior and on the lip part on the interior. ALB-3, Sq B1, Qds 1 and 2, Pit 5 sealed by Layer 3A. Sub-period IIA.

22. Fragment of a vase of red ware: externally grooved out-turned and slightly under-cut rim, carinated neck, externally grooved shoulder with a running line of notched decoration; medium fabric, well fired, red core, red slipped on the exterior and upto the neck on the interior. ALB-3, Sq B1, Qd 4, Layer 3A. Sub-period IIA.

23. Fragment of a vase of red ware: featureless splayed out rim, short carinated neck, externally grooved oblique shoulder; medium fabric, well fired, dull red core, light red slipped on the exterior. ALB-3, Sq B1, Qds 3 & 4, Layer 2. Sub-period IIB.

24. Rim fragment of a vase of red ware: nail-headed out-turned rim, concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 3 and 4, Layer 1A. Sub-period IIB.

25. Rim fragment of a vase of red ware: externally grooved out turned rim with a groove on the interior; medium fabric, well fired but smoky black core, treated with a red slip. ALB-3, Sq B1, Qd 3, Layer 1. Sub-period IIB.

26. Fragment of a *hāṇḍī* of red ware: out-turned beaked rim, carinated neck, decorated shoulder having four groups of running notched triangles in two rows each at cardinal direction; medium fabric, well fired, red core, red slipped on the upper exterior,. ALB-3, Sq A1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

27. Upper part of a vase of red ware: externally projected flared out rim, carinated neck, oblique shoulder; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 2. Sub-period IIB.

28. Fragment of a vase of red ware: externally grooved out-turned and slightly under-cut rim, carinated neck, ribbed shoulder having a notched decoration; medium fabric, well fired, red core, red slipped on the exterior and upto the neck on the interior. ALB-3, Sq B1, Qds 3 & 4, Layer 1A. Sub-period IIB.

29. Fragment of a vase of red ware: externally grooved out-turned and slightly under-cut rim, carinated neck, mildly grooved shoulder with a running line of notched decoration; medium fabric, well fired, red core, red slipped on the exterior and upto the neck on the interior. ALB-3, Sq B1, Qds 3 & 4, Layer 1A. Sub-period IIB.

30. Rim fragment of a vase of red ware: nail-headed rim with two deep grooves at the top, short concave neck; medium fabric, not so well fired, blackish core, faint remains of a light red slip. ALB-3, Sq YB1, Qd 1, Layers 1 and 1A. Sub-period IIB.

31. Rim fragment of a vase of red ware: externally thickened out-turned rim; short neck, expanding shoulder; coarse fabric, well fired, granular red core. ALB-3, Sq A1, Qd 1, Layer 1. Sub-period IIB.

32. Lower fragment of a vase of red ware: rounded lower part with grooved exterior and ring base; medium fabric, well fired, red core; treated with a red slip on the exterior. ALB-3, Sq A2, Qd 4, Layer 2. Sub-period IIB.

33. Fragment of a vase of red ware: externally grooved, flat-topped, vertically clubbed rim, small concave neck, expanding shoulder with a groove at the upper; coarse fabric, not so well fired, smoky red core, treated with a red slip. ALB-3, Sq A1, Qd 1, Layer 2. Sub-period IIB.

34. Fragment of a vase of red ware: externally beaked rim, medium-sized concave neck with grooved exterior at lower level, expanding shoulder; coarse fabric, not so well fired, black core between the red. ALB-3, Sq B1, Qds 1 and 2, Layer 2. Sub-period IIB.

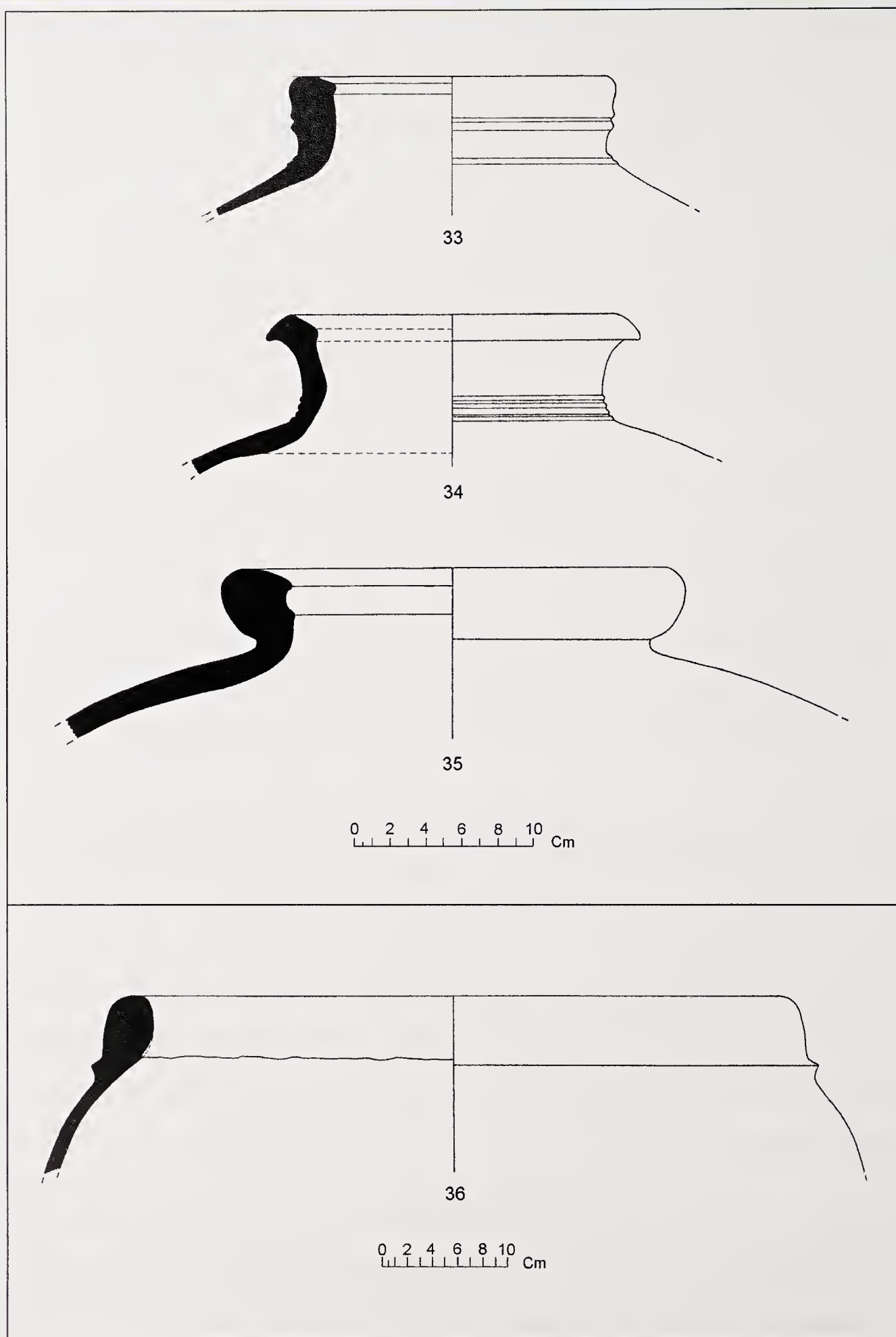



Fig. 29 Large-sized vases of red ware, Period II.

35. Fragment of a large-sized storage jar of red ware: clubbed rim with a prominent thumb-depression on the interior, short neck, expanding shoulder; coarse fabric, ill fired, dull red and thick granular core, light red slipped on the exterior. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

36. Fragment of a large-sized storage jar of red ware: clubbed rim, short ribbed neck, down shoulder; coarse fabric, ill fired, black granular core, treated with a red slip on the exterior. ALB-3, Sq B1, Qds 3 and 4, Layer 3. Sub-period IIA.

Hāṇḍīs (Fig. 30)

37. Fragment of a *hāṇḍī* of red ware: splayed out rim with a groove along the outer edge at the top, carinated neck, grooved oblique shoulder, carinated body, roughened lower-exterior; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq A1, Qd 1, Layer 2. Sub-period IIB.

38. Fragment of a large mouthed *hāṇḍī* of red ware: somewhat externally beaked rim, short mildly concave shoulder, carinated body turned to a rounded bottom; medium fabric, well fired, red core, treated with a red slip on the interior, with smoky black exterior. ALB-3, Sq A1, Qd 1, Layer 2A. Sub-period IIB.

39. Fragment of a *hāṇḍī* of red ware: horizontally splayed out slightly undercut rim, short shoulders, ledged carinated body, round base; medium fabric, well fired, black core between the red, remains of a dark chocolate slip on the upper exterior. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

40. Fragment of a *hāṇḍī* of red ware: externally beaked rim, carinated neck, small oblique shoulder with two small vertical incised strokes in the upper part, ledged carinated body, roughened lower with granular surface and with the evidence of soot; medium fabric, well fired, red core, treated with a light red slip on the upper upto the shoulder. ALB-3, Sq ZB1, Qd 1, Layer 2. Sub-period IIB.

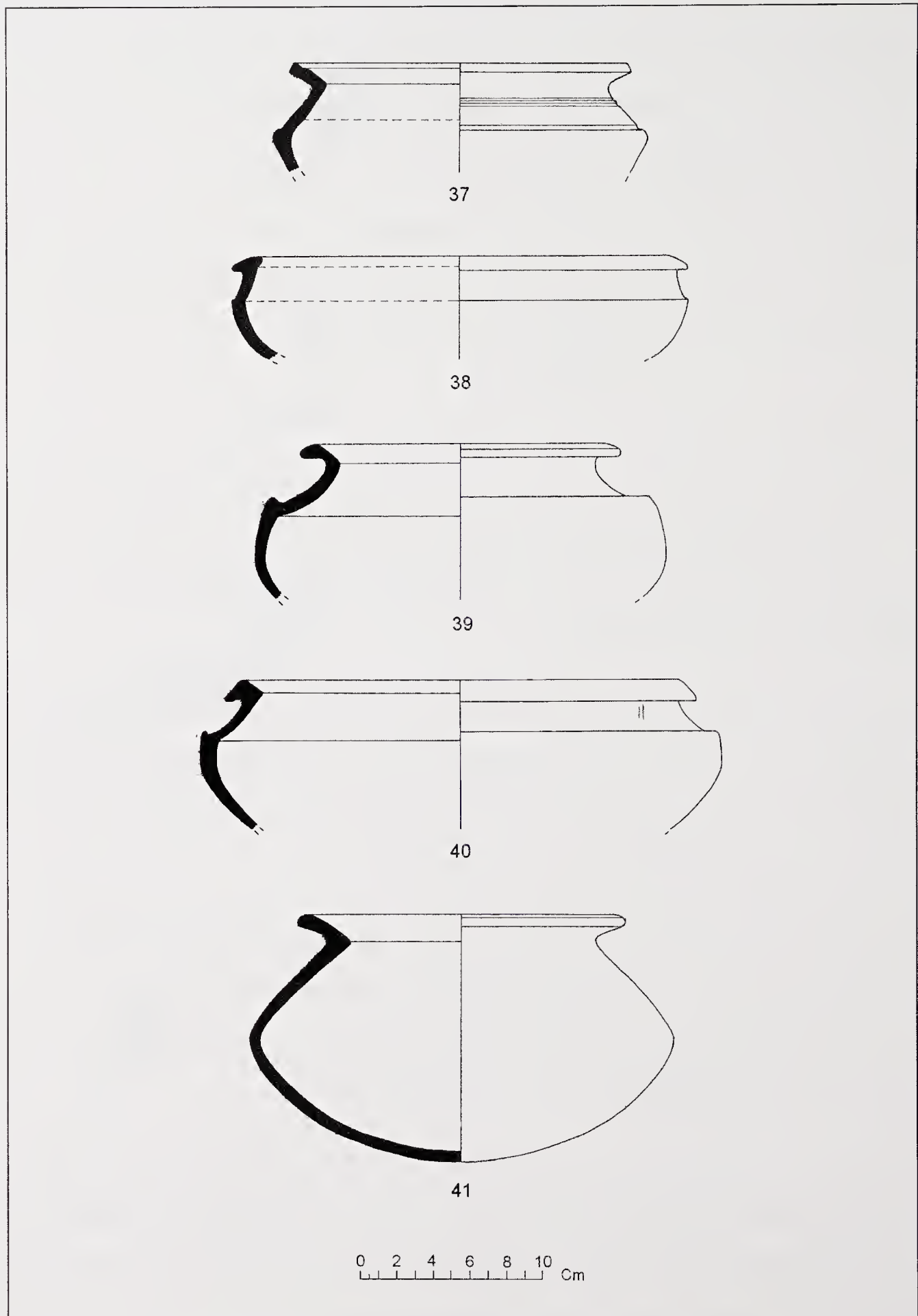



Fig. 30 Hāṇḍīs of red ware, Period II.

41. *Hāṇḍī* of red ware: splayed out rim, carinated neck, oblique shoulder, carinated body, round and roughened lower exterior with the evidence of soot marks; medium fabric, well fired, red core, treated with a red slip on the upper exterior upto the carination and treated with a mud-paste for making rough surface on the lower-exterior. ALB-3, Sq ZC1, Qd 4, Layer 3A. Sub-period IIA.

Spouted and other vases (Fig. 31)

42. Miniature vase of red ware: featureless vertical rim, short and straight neck, small globular body, flat base; medium fabric, well fired, unslipped. ALB-3, Sq ZB1, Qd 4, Layer 1A. Sub-period IIB.

43. Miniature vase of red ware: featureless splayed out rim, carinated neck, corrugated body with a carination below the shoulder, flat base; medium fabric, well fired, red core, treated with a red slip at the shoulder on the exterior and at the rim on the interior. ALB-3, Sq ZB1, Qd 4, Layer 2. Sub-period IIB.

44. Fragment of a miniature pot of red ware: featureless flared out rim, small concave neck, small globular body with a groove on the shoulder, medium fabric, not so well fired, smoky core, treated with a red slip on the exterior. ALB-3, Sq ZB1, Qd 1, Layer 1A. Sub-period IIB.

45. Small-sized spouted vase of red ware: featureless rim, small concave neck, globular body with grooved shoulder having a small spout, flat base; medium fabric, well fired, red core, treated with a micacious shined red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 1A. Sub-period IIB.

46. Fragment of a medium-sized spouted vase of red ware: horizontally splayed-out rim with a grooved top, concave neck, oblique shoulder, a globular body having a long spout; medium fabric, well fired, red core, treated with a micacious shined red slip. ALB-3, Sq YC1, Qd 2, Layer 1. Sub-period IIB.

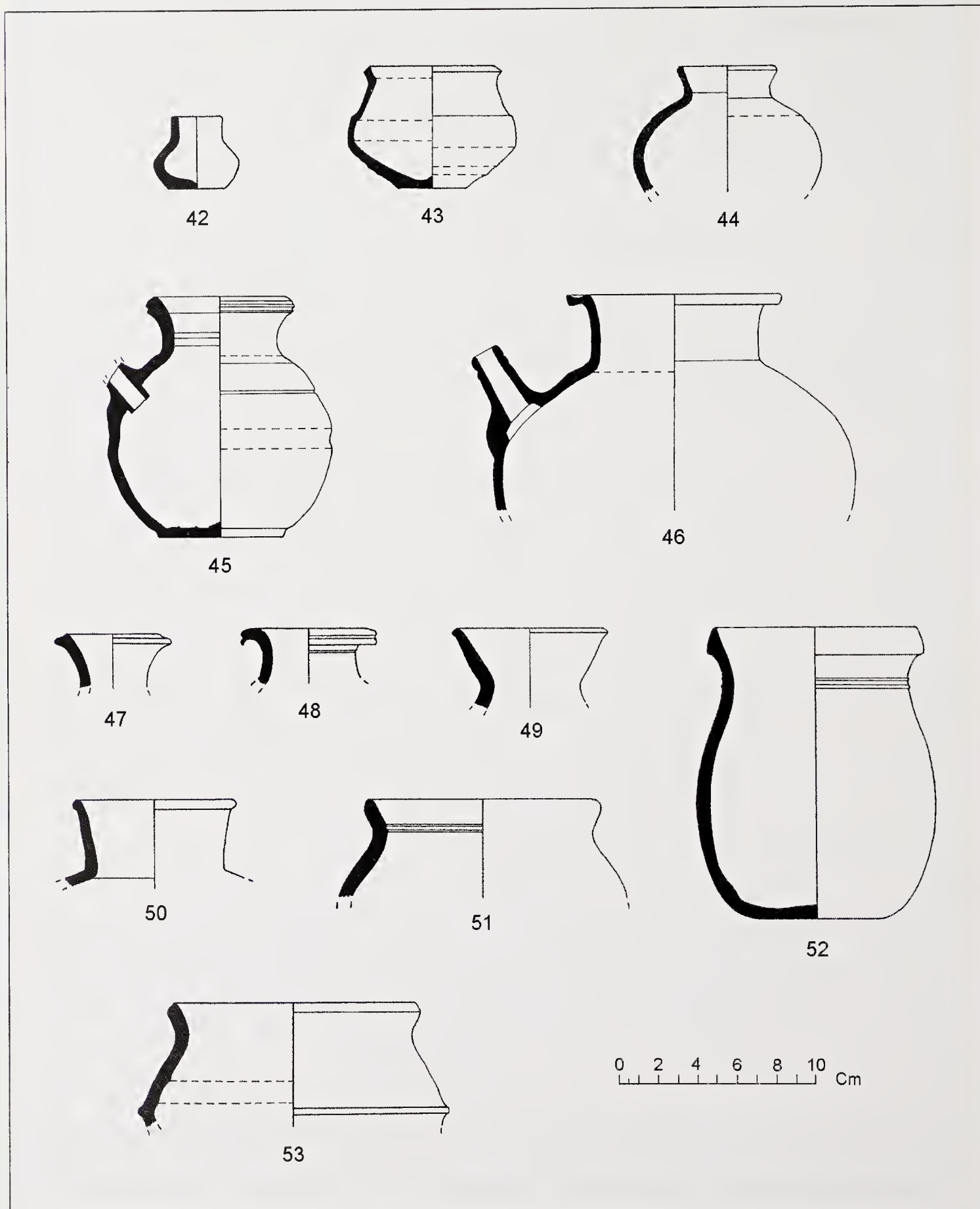



Fig. 31 Spouted and other vases of red ware, Period II.

47. Rim fragment of a vase of red ware: flared out, short-beaked rim, narrow concave neck; medium fabric, well fired, red core, faint remains of a red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

48. Rim fragment of a vase of red ware: beaked rim with a groove on the exterior, concave neck with a groove at the upper; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq YB1, Qds 1 and 2, Layer 2. Sub-period IIB.

49. Rim fragment of a vase of red ware: flared out featureless rim; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq A2, Qd 4, Layer 1. Sub-period IIB.

50. Rim fragment of a vase of red ware: mildly externally thickened rim, almost straight neck; medium fabric, well fired, red core; treated with a red slip. ALB-3, Sq YC1, Qd 2, Layer 2. Sub-period IIB.

51. Fragment of a small-sized vase of red ware: featureless splayed out rim, short concave neck with a groove on the interior, down shoulder, medium fabric, well fired, red core. ALB-3, Sq B1, Qds 3 and 4, Layer 2. Sub-period IIB.

52. Small - sized vase of red ware: collared rim, small concave ribbed neck, elongated body, flat base; medium fabric, not so well fired, smoky core, treated with a ochre wash. ALB-3, Sq B1, Qds 1 and 2, Layer 3. Sub-period IIA.

53. Fragment of a small-sized vase of red ware: featureless splayed out rim, short concave neck, down shoulder, carinated body; medium fabric, well fired, red core, red slipped. ALB-3, Sq B1, Qds 1 and 2. Unstratified.

Sprinklers and other pots (Fig. 32)

54. Fragment of a sprinkler of red ware: upper part having a flanged top with a centrally placed small truncated conical finial-type mouth opening, narrow-concave neck; medium fabric, well fired, red core, treated with a fine red slip. ALB-3, Sq ZB1, Qds 1 and 2, Layer 3. Sub-period IIA.

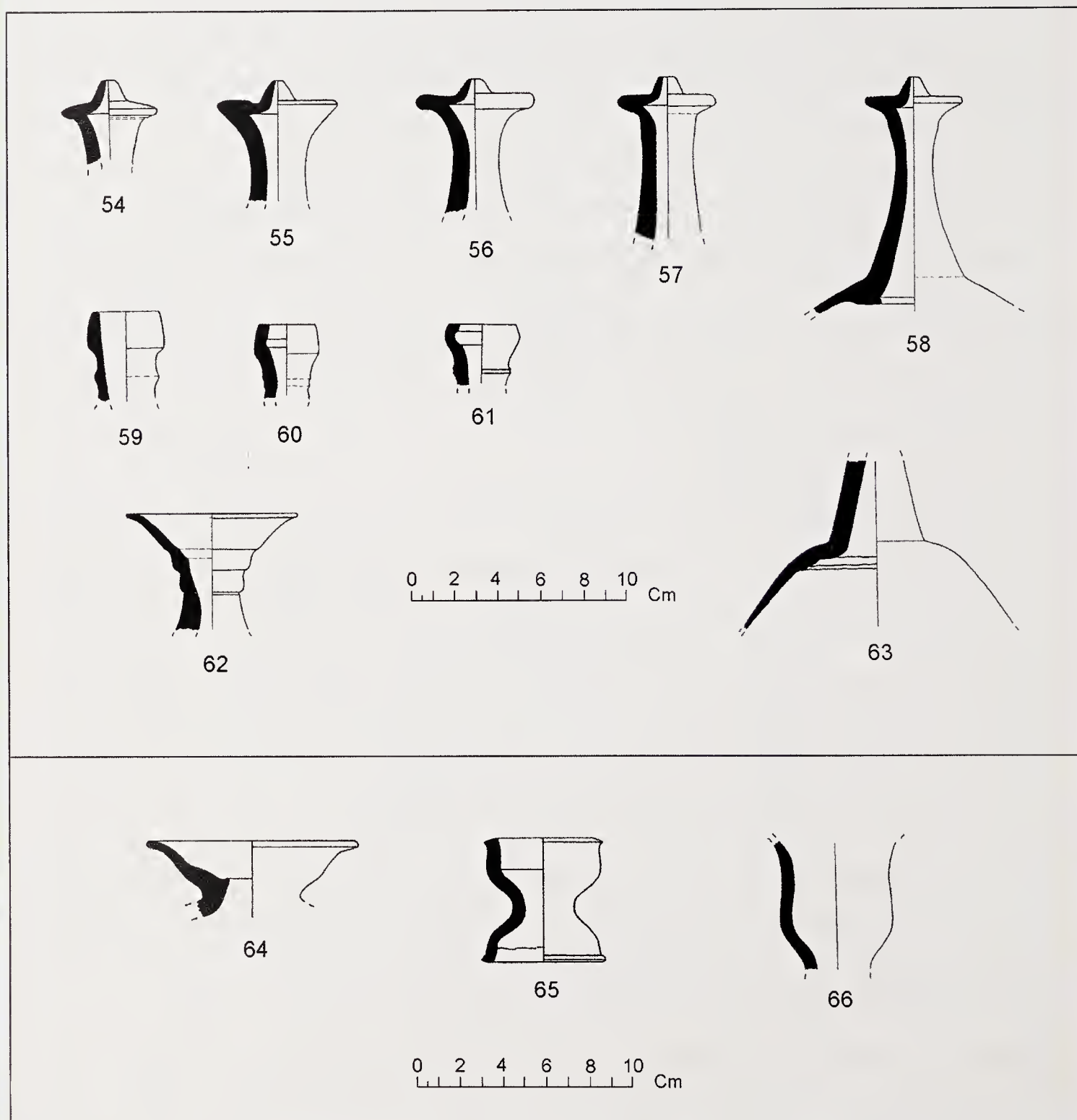



Fig. 32 Sprinklers and other pots of red ware, Period II.

55. Fragment of a sprinkler of red ware: upper part having a flanged top with a centrally placed conical finial-type mouth, narrow-concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 3 and 4, Layer 2. Sub-period IIB.

56. Fragment of a sprinkler of red ware: upper part having a flanged top with a centrally placed conical finial-type mouth, narrow-concave neck; medium fabric, well fired, red core, treated with a dark brown slip. ALB-3, Sq B1, Qds 1 and 2, Layer 3. Sub-period IIA.

57. Fragment of a sprinkler of red ware: flanged top with a centrally placed truncated conical finial-type mouth, long and narrow-concave neck; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Layer 3A. Sub-period IIA.

58. Fragment of a sprinkler of red ware: flanged top with a centrally placed small conical finial-type mouth, long and narrow concave neck, expanding shoulder; medium fabric, well fired, red core, treated with a dark red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

59. Upper part of a narrow-necked vase of red ware: medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 4 Layer 2. Sub-period IIB.

60. Upper part of a narrow-necked vase of red ware: medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 3 and 4, Layer 2. Sub-period IIB.

61. Upper part of a narrow-necked vase of red ware: medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A. Sub-period IIB.

62. Fragment of a vase of red ware: flared-out rim, narrow-ridged neck; medium fabric, well fired, red core, red slipped. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

63. Fragment of a sprinkler of red ware: middle part having a long-narrow neck, oblique shoulder; medium fabric, not so well fired, smoky black core, treated with a red slip. ALB-3, Surface.

64. Upper part of a vase of red ware: flared out rim; medium fabric, well fired, red core, treated with a fine red slip on the interior. ALB-3, Sq B1, Qds 1 and 2, Pit 5 sealed by Layer 3A. Sub-period IIA.

65. *Ḍamaru*-shaped object of red ware: featureless rim of the top as well as base; medium fabric, well fired, dull red core, unslipped. ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub-period IIB.

66. Fragment of a pot of red ware: rim and base are missing, somewhat concave and elongated body; medium fabric, well fired, smoky core, fine red slipped. ALB-3, Sq B1, Qds 1 and 2, Layer 3. Sub-period IIA.

Decorated Pottery (Figs. 33 & 34 and Pls. XIX, XX & XXI)

1. Shoulder-fragment of a vase of red ware: It bears a pre-firing running design of thumb-depression on an applique band; coarse fabric, ill fired, black core, remains of a red slip on the exterior. ALB-3, Sq B1, Qds 1 and 2, Layer 3A. Sub-period IIA.

2. Shoulder-fragment of a vase of red ware: It bears a post-firing incised design. The design consists of a series of triangles between a group of horizontal lines. In each of the blank triangles there is a five-petal flower while the opposite triangles are hatched with parallel lines; medium fabric, well fired, smoky black core, treated with a fine red slip on the exterior. ALB-3, Sq B1, Qds 1 and 2, Layer 1A. Sub-period IIB.

3. Shoulder-fragment of a vase of red ware: The design consists of a band of incised uneven vertical strokes between horizontal lines executed before firing; medium fabric, well fired, red core, treated with a red slip on the exterior. ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A. Sub-period IIB.

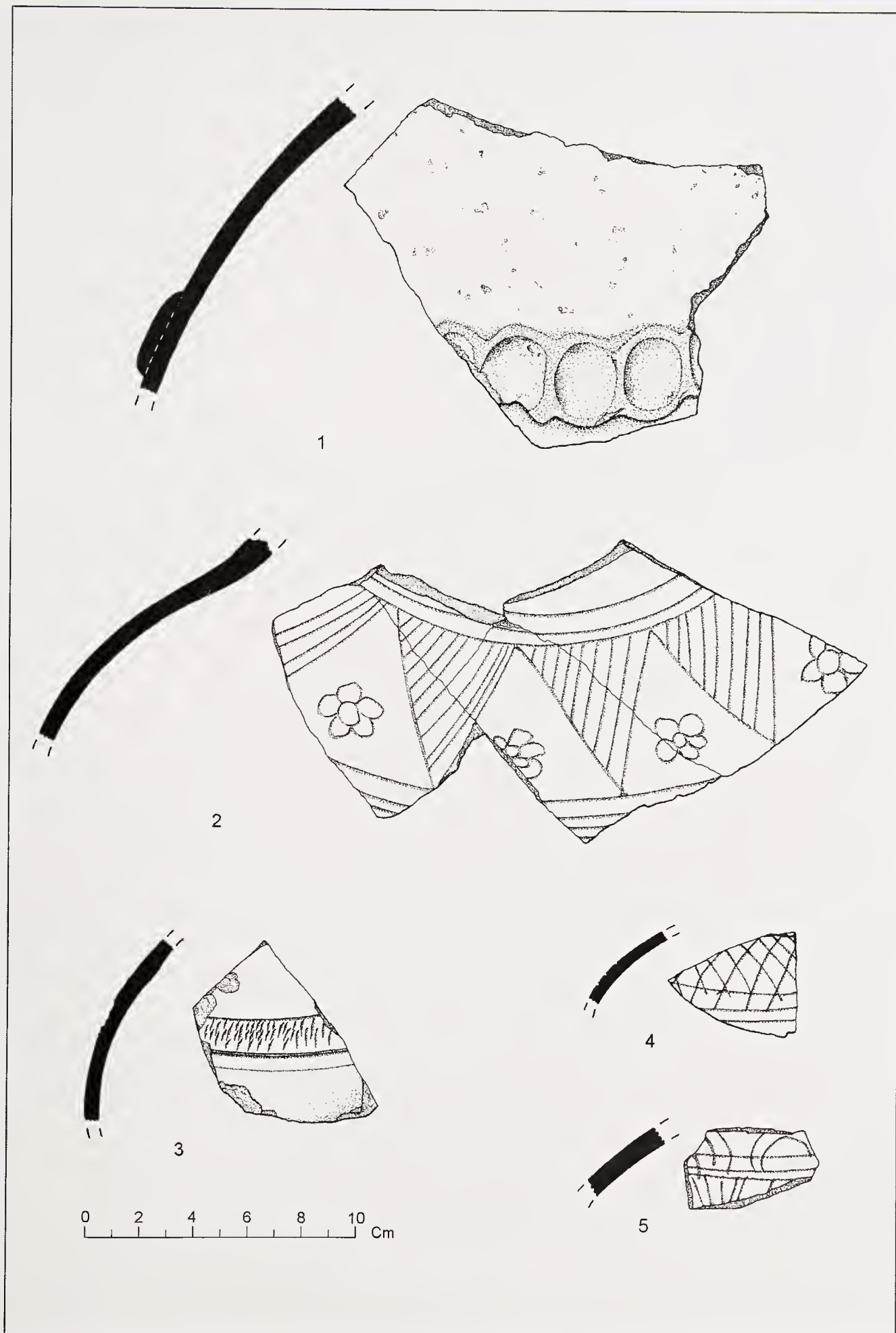
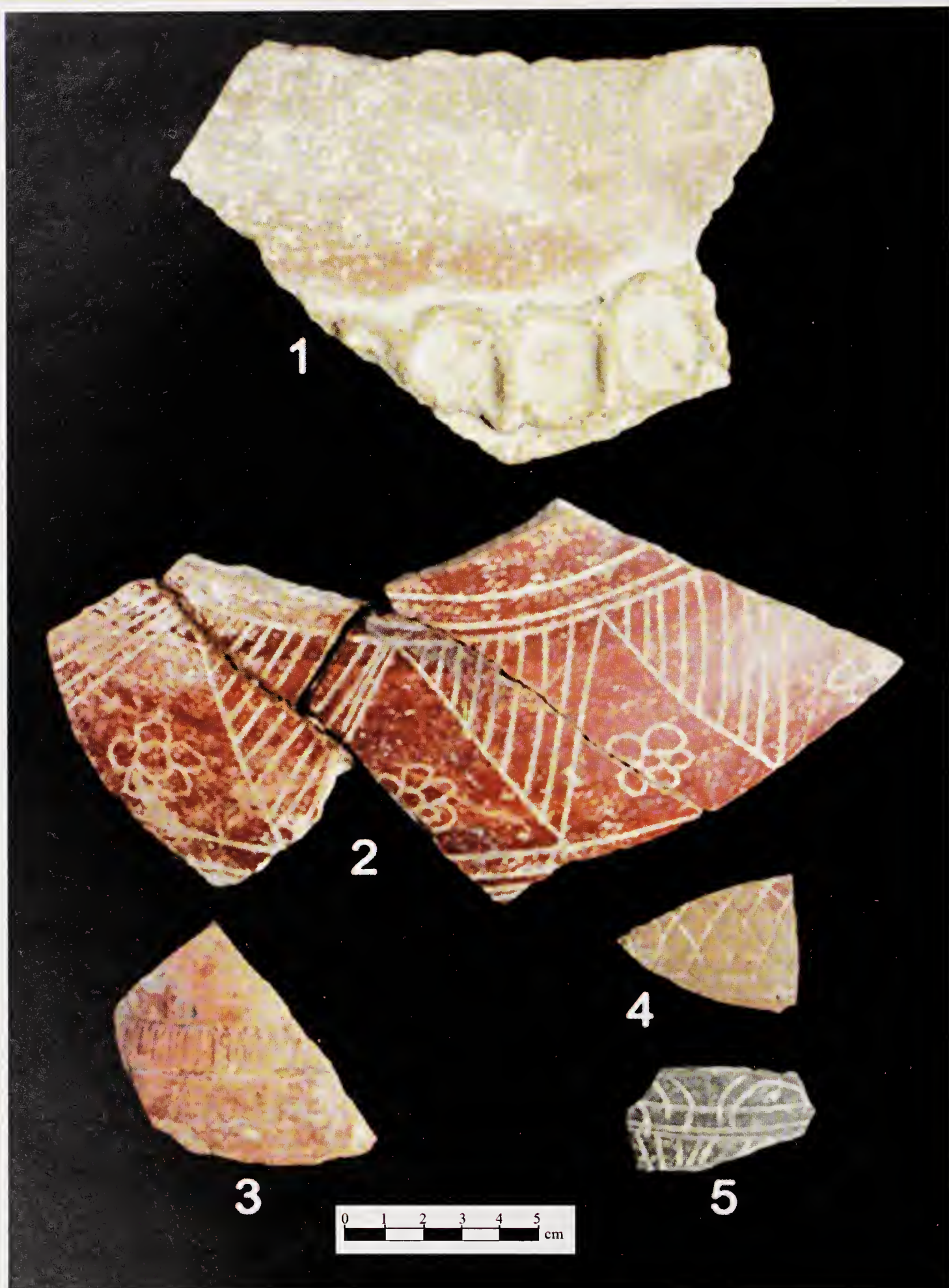



Fig. 33 Decorated sherds of red ware, Period II.

Pl. XIX Decorated red ware, Period II.

4. Shoulder-fragment of a vase of red ware: It bears a post-firing incised design consisting of obliquely placed criss-cross pattern; medium fabric, well fired, smoky grey core, traces of a red slip. ALB-3, Sq B1, Qds 1 and 2, Pit 2 sealed by Layer 1. Sub-period IIB.

5. Shoulder-fragment of a vase of red ware: It bears a post-firing incised design in two registers. The upper register has a line of multiple curves. Below it there are horizontal lines and further down are oblique strokes; medium fabric, not so well fired, dull red core, grey surface on the exterior. ALB-3, Sq ZB1, Qd 1, Layer 1A. Sub-period IIB.

6. Fragment of a vase of red ware: It bears an impressed floral design below the ledge. The design has sun-flower-like pattern with small leaves; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 3 and 4, Layer 1A. Sub-period IIB.

7. Fragment of a vase of red ware: It is decorated with barbotine design; medium fabric, well fired, red core, treated with a fine red slip. The decorated part is mica-dusted. ALB-3, Sq B1, Qds 1 and 2, Layer 3A. Sub-period IIA.

8. Part of a vase of red ware: It is decorated with barbotine design which is mica-dusted; medium fabric, well fired, red core. ALB-3, Sq B1, Qds 1 and 2, Layer 3A. Sub-period IIA.

9. Part of a vase of red ware: It is decorated with an impressed chequered design; medium fabric, well fired, red core. ALB-3, Sq ZB1, Qd 1, Layer 1A. Sub-period IIB.

10. Fragment of a vase of red ware: It is decorated with an impressed design below a plain shoulder in low relief. The design consist of vertical lines between which there are vertically placed dots; medium fabric, well fired, red core, treated with a red slip and also with a mica-dusting of the decorated parts. ALB-3, Sq B1, Qd 2, Layer 1A. Sub-period IIB.

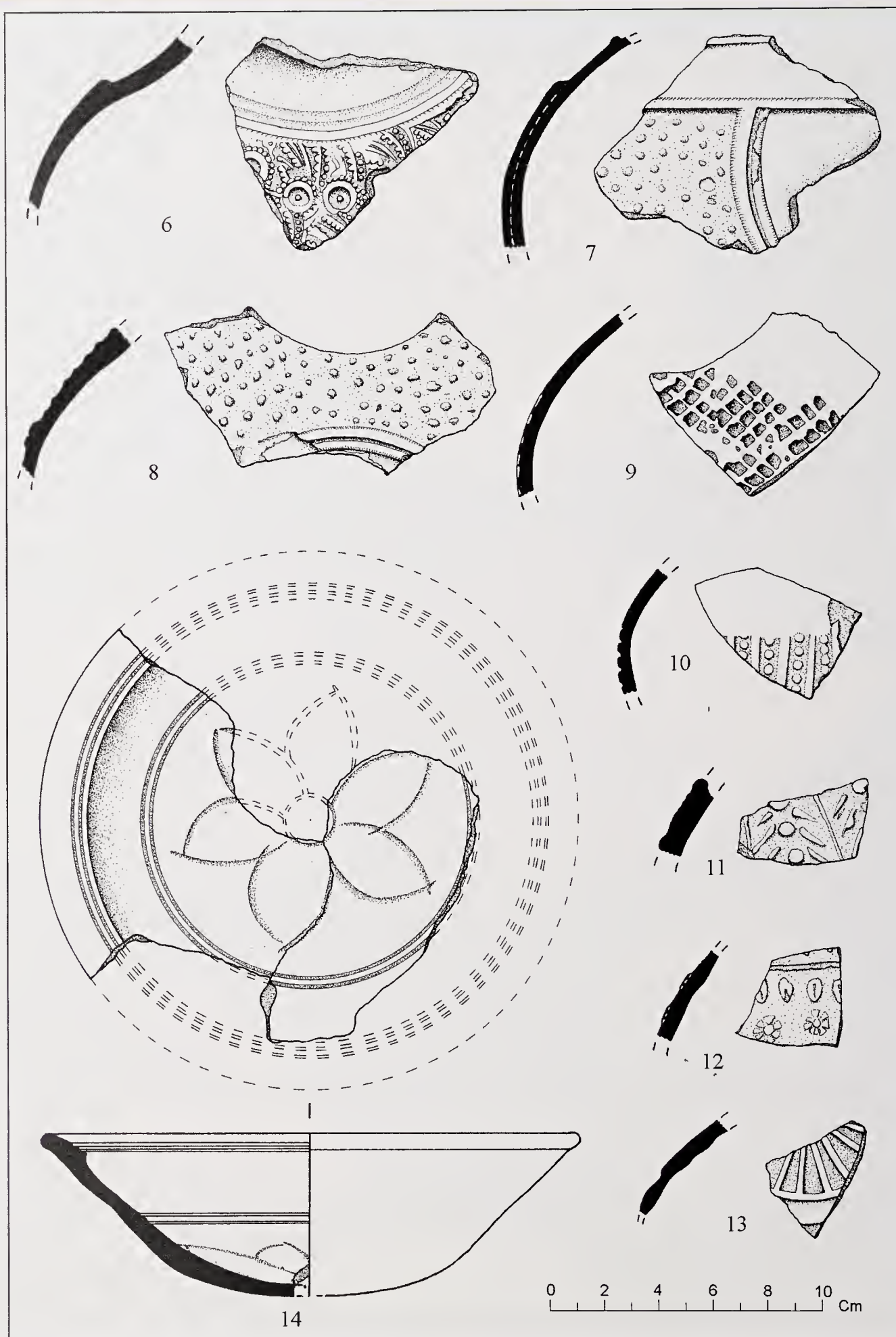
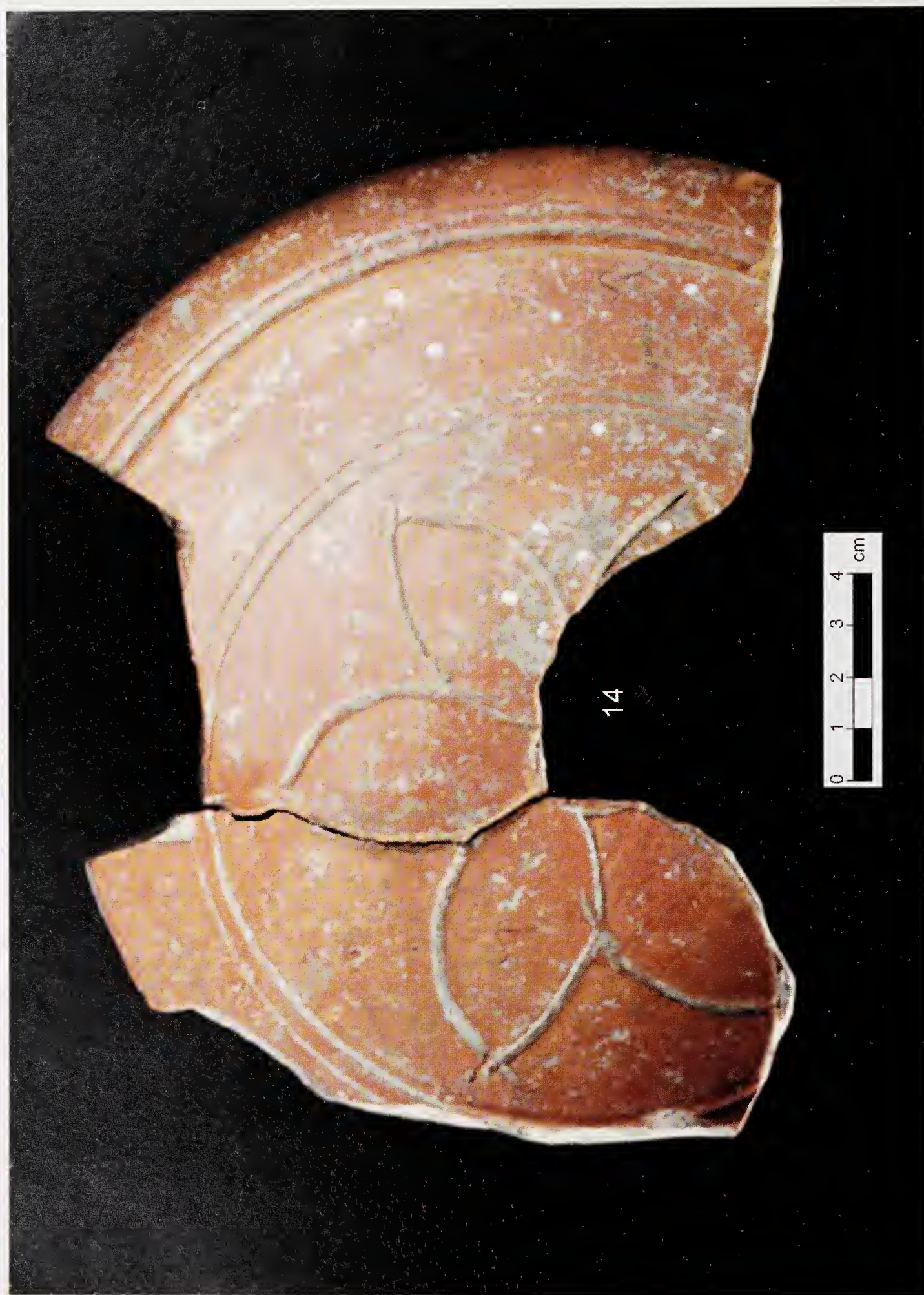



Fig. 34 Decorated sherds of red ware, Period II.

Pl. XX Decorated red ware, Period II.

Pl. XXI Decorated red ware, Period II.

11. Fragment of a vase of red ware: It is decorated with an impressed floral design and vertically placed dots; medium fabric, well fired, red core, treated with a mica-dusted slip. ALB-3, Sq B1, Qds 3 and 4, Layer 1A. Sub-period IIB.

12. Fragment of a vase of red ware: It is decorated with an impressed design comprising a row of leaves and another row of flowers below that; medium fabric, well fired, red core, treated with a mica-dusted slip. ALB-3, Sq B1, Qds 3 and 4, Layer 2. Sub-period IIB.

13. Fragment of a vase of red ware: It is decorated with an impressed design of radiating lines in a circle; medium fabric, well fired, red core, treated with a red slip on plain surface and mica-dusting on the decorated part. ALB-3, Sq B1, Qds 1 and 2, Pit 2 sealed by Layer 1A. Sub-period IIB.

14. Lid-cum-bowl of red ware: Flared-out rim with a ledge on the interior, tapering sides, sagger base. The interior is decorated with a pre-firing incised design of a full-bloomed six-petal flower; medium fabric, well fired, red core, treated with a red slip. ALB-3, Sq B1, Qds 1 & 2, Layer 1A. Sub-period IIB.

Terracotta Figurines

Chapter VI

(i) HUMAN FIGURINES

The excavation yielded ten terracotta human figurines of which eight are identifiable and the rest are broken beyond recognition. All these came from Period II. There was none from Period I.

These figurines, made of fine-to-medium-grained clay, are fairly well fired and are light red in colour. All the specimens have a flat back – a feature indicating that these were made from moulds.

The eight specimens are described below :

1. (Pl. XXII) A mother-and-child figure in what is known as the *aṅka-dhātrī* style. The child is held by the lady (mother) with her left arm. In the upturned flexed right arm she holds what may have been a toy(?). She wears a *hanslī* around her neck and probably rings in the ears. The hair drops down in locks, one on each side of the head, there also being a crest at the top. The child wears around its waist what is known as *chhoontā* in Bundelkandi language – a kind of black-colored twined thread, the black colour being used to deflect an evil eye. The child's left hand is placed on the left breast of the lady.

   Mould-made with flat back; fine-grained clay; well fired to pinkish red colour. Height 65.30 mm; width 49.08 mm; thickness 17.58 mm.

   ALB-3, Sq B1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 83.

2. (Pl. XXIII) Though the upper and lower parts of the plaque are damaged, it shows a man and a woman together. The latter is on the proper left of the former. The man's right hand rests on the breast of the woman

Pl. XXII Terracotta figure of mother-and-child.

Mould-made with flat back; fine-grained clay; well fired to pinkish red colour. Height 84.27 mm; width 74.56 mm; thickness 17.44 mm.

ALB-3, Sq A1, Qd 1, Layer 3, Sub-period IIA. Reg. No. 6.

1. (Pl. XXIV, 3) Head of a human figure with elaborate hair-do. The medial partition-line of the hair is prominent and the hair-locks in three tiers fall down on each side of the head. There is also a hair-band above the forehead. Hanging down from the left ear may also be seen a two-disc ornament. The face is graceful, with prominent eyes, nose and mouth.

   Mould-made with flat back; fine-grained clay; well fired to pinkish red colour. Height 59.73 mm; width 59.81 mm; thickness 27.35 mm.

   ALB-3, Sq B1, Qds 1 & 2, Pit 4 sealed by layer 2, Sub-period IIB. Reg. No. 160.

2. (Pl. XXIV, 4) Head of a human figure, with prominent hair-do. The medial line from which the hair parts each way is very clear. On each side of the head the locks of hair descend in three solid tiers. At the top is a hair-crest. There is a two-disc ornament in the left ear. The face, with prominent eyes, nose and mouth, is graceful.

   Mould-made with flat back; fine-grained clay; well fired to pinkish red colour. Height 61.18 mm; width 60.30 mm; thickness 35.75 mm.

   ALB-3, Sq YC2, Qd 2, Pit 2 sealed by layer 3, Sub-period IIA. Reg. No. 25.

3. (XXV, 5) Head of a human figure. The hair-do in this case is slightly different from that in the previous two specimens, though the hair-locks hang down, in tiers on each side of the head. Above the forehead may also be seen 'beaded' hair, followed further up by a solid band and a prominent crest. The face is rather heavy and projects slightly forward, with the mouth being somewhat wide. On the proper right of the head may also be noted the ear-lobe. That on the left is damaged.

Pl. XXIII Terracotta plaque of man and woman together.

Pl. XXIV Terracotta human heads.

Pl. XXV Terracotta human heads.

Mould-made with flat back, fine-grained clay; well fired, but dull red in colour. Height 43.67 mm; width 39.08 mm; thickness 20.20 mm.

ALB-3, Sq A1, Qd 2, Layer 2, Sub-period IIB. Reg. No. 11.

6. (Pl. XXV, 6) Head of a human figure, broken at the neck. This is the only specimen not made from a mould, but is hand-modelled. Instead of showing the hair-do, the modeller has depicted, with solid clay, a head-cover with a crest towards the back. There was perhaps another crest on the proper right. Though merged with the lower part of the head-cover, there are the ears. Their thickness suggests that the modeller wanted to show the use of some heavy ornament probably a disc, though the same is not clearly separated from the lobe. The face is prominent with elongated eyes, sharp nose and well delineated mouth.

   Hand-modelled, with round back; fine-grained clay; well fired, though light brown in colour. Height 42.32 mm; width 34.04 mm; thickness 33.17 mm.

   ALB-3, Sq A2, Qd 4, Layer 2, Sub-period IIB. Reg. No. 3.

7. (Pl. XXVI, 7) Middle part of a human figurine. One may see the folds of the garment (*dhotī*) as well as broken legs.

   Mould-made, with flat back, medium-grained clay; well fired, light brown in colour. Height 51.36 mm; width 50.71 mm; thickness 15.56 mm.

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 219.

8. (XXVI, 8) Probably leg-part of a human figure, with a bend at the knee.

   Hand-modelled in the round. Medium-grained clay, well fired, light brown in colour. Length 57.76 mm; thickness 16.54 mm.

   ALB-3, Sq ZB2, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 189.

Pl. XXVI Terracotta fragments of human figures.

(ii) FAUNAL FIGURINES

(Pl. XXVII)

Under this category are four figurines all of which are either broken or highly worn out, making their identification rather dubious.

1. Probably a bird seated on a flat pedestal which narrows down towards the tail. Crests above the head. Beak broken.

   Hand-modelled; medium-grained clay; well fired; pinkish brown in colour. Height 59.48 mm; maximum length of the pedestal 66.36 mm; maximum width of the pedestal 44.10 mm.
   ALB-3, Sq B1, Qds 1 & 2, Pit 4 sealed by layer 2, Sub-period IIB. Reg. No. 118.

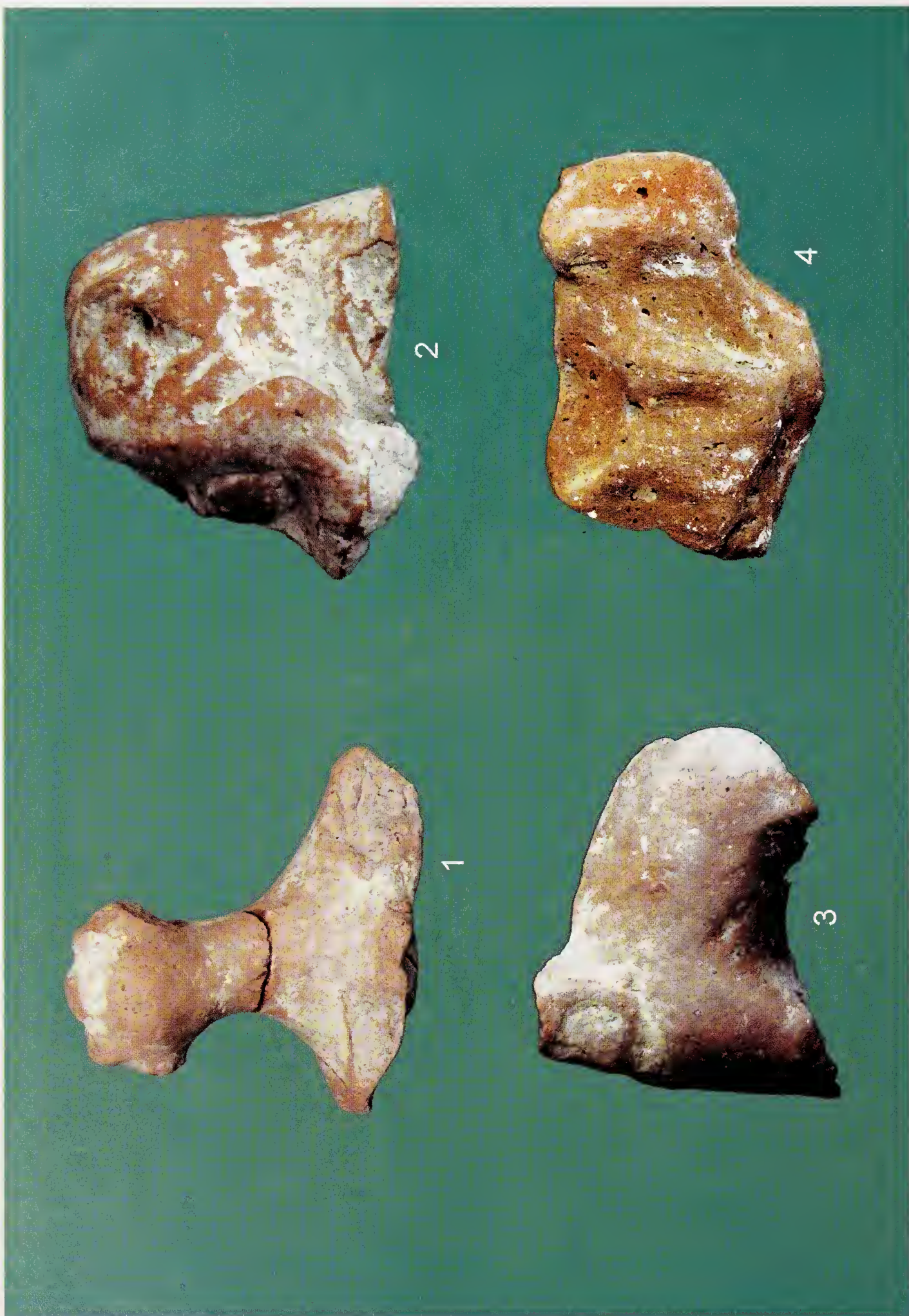
2. Probably the head part of an animal (monkey?) whose one eye, depicted with an applied pallet, may be seen.

   Hand-modelled; medium-grained clay; well fired to pinkish red colour. Height 31.13 mm; width 36.94 mm; thickness 20.62 mm.
   ALB-3, Sq B1, Qds 3 & 4, Layer 2, Sub-period IIB. Reg. No. 158.

3. Broken part of an animal, probably a bull.

   Hand-modelled, medium-grained clay; well fired to pinkish brown in colour. Maximum length 45.48 mm; height 41.77 mm; thickness 18.07 mm.
   ALB-3, Sq B1, Qds 1 and 2, Pit 2 sealed by layer 3A. Sub-period IIA. Reg. No. 106.

4. Highly worn out (animal?) figure. The rectangular adjunct to the body is, again, enigmatic.

   Flat back, probably produced from a mould; medium-gained clay; moderately fired, dull-red colour. Length 62.62 mm; height 42.17 mm; thickness 24.27 mm.
   ALB-3, Sq ZB1, Qd 4, Unstratified. Reg. No. 150.

Pl. XXVII Terracotta faunal figurines.

Terracotta Stamps And Dabbers

Chapter VII

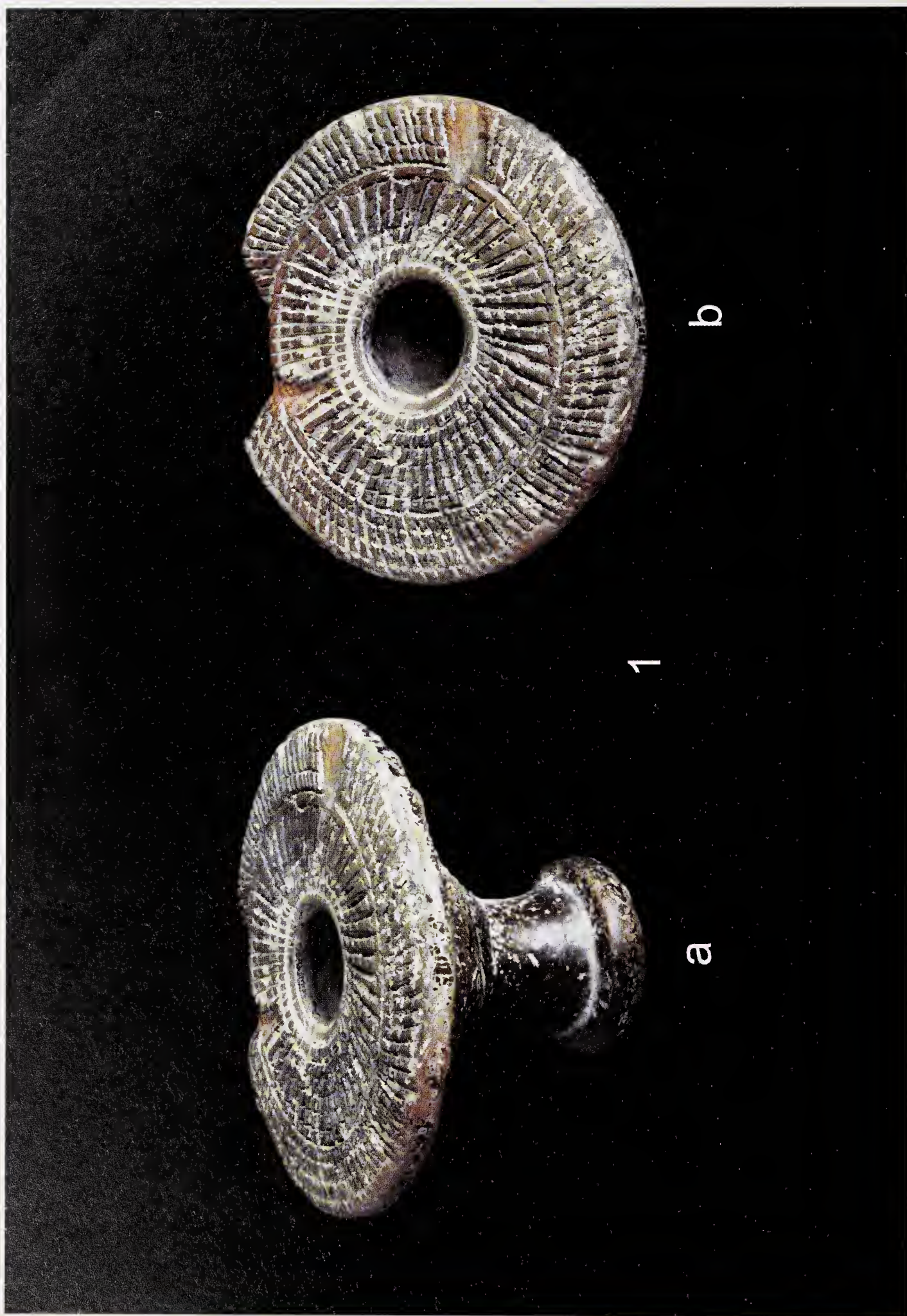
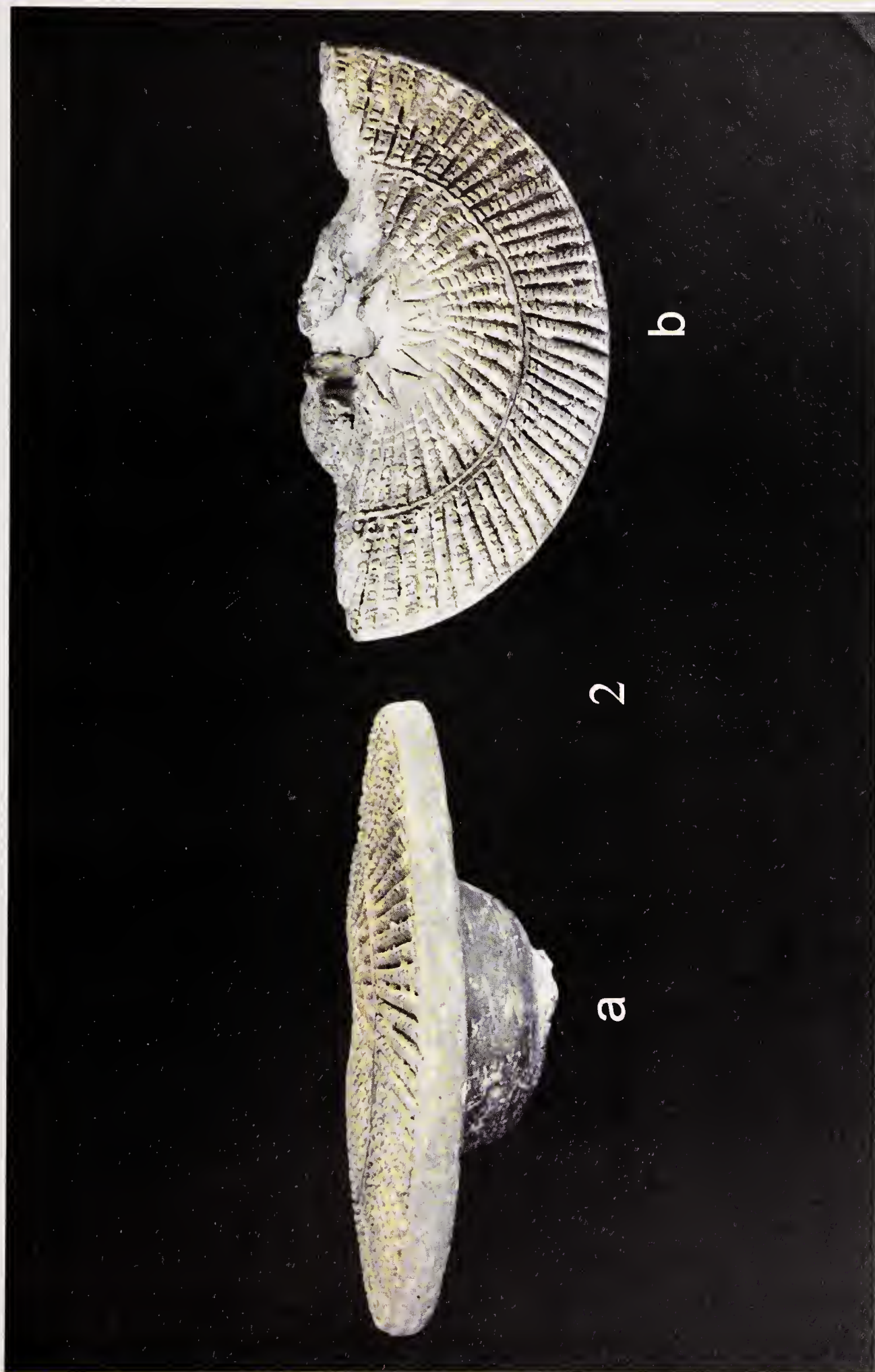
(i) STAMPS

From the Gupta levels of the site certain specimens have been discovered the exact use of which, however, is debated. In all likelihood, these may have been potter's stamps. The characteristic features of these specimens are: a flat-knobbed handle; a cylindrical or conical body; and discular lower end, usually with an orifice. This disc is decorated with concentric/radial designs, sometimes separated by circles. Selected specimens are described below:

1. (Pl. XXVIII, a and b) This is a nearly compete specimen, with slightly damaged disc. With an orifice at the centre, the disc is decorated in two separable sets of incised designs. The set nearer the orifice consists of a series of radial bands which have been transversely sub-divided by incised lines. The other set nearer the circumference is separated from the former set by a circular band. It is also similarly decorated but the alignment of the radial lines is in a different direction, thus making the two sets clearly discernible.

   Made of medium grained clay, the specimen is well fired and has a dark brownish slip. The diameter of the decorated disc is 85.56 mm, while the total height of the specimen is 58.11 mm.

   ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 128.

2. (Pl. XXIX, a and b) In this case, the handle is missing and the orifice part is also damaged. It is, however, interesting to note that the orifice is very small and is also surrounded by a multipronged starry design. The rest of the decorated surface of the disc is divided by a circle into two concentric compartments, each of which comprises several radial bands cut by transverse incised lines.

Pl. XXVIII Terracotta stamp, two views.

Pl. XXIX Terracotta stamp, two views.

Made of medium-grained clay, the specimen has light grey core and dark grey-slipped surface. Available height 30.37 mm; diameter of the disc 93.24mm.
ALB-3, Sq B1, Qds 3 and 4, Pit X sealed by Layer 2, Sub-period IIB. Reg. No. 184.

3. (Pl. XXX, a and b) Shape-wise this specimen is similar to No. 1, above. It has a flat-knobbed handle, cylindrical middle part and a flat disc which, however, is broken. Around a central orifice, there is a series of radiating bands, each one further divided into parts by incisions. These bands run up to a circular band which, however, is only partly available.

   Made of medium-grained clay, the specimen is well fired and has a dark brownish slip. Height 54.87 mm; available diameter of the disc 64 mm.
   ALB-3, Sq YC2, Qd 2. Pit sealed by Layer 3, Sub-period IIA. Reg. No. 39.

4. (Pl. XXXI, a and b) This specimen is much more broken than the foregoing. The knob (if it was there) of the handle is gone. The disc too is broken. However, around the central orifice, there are two sets of radiating decorations, separated by a circle.

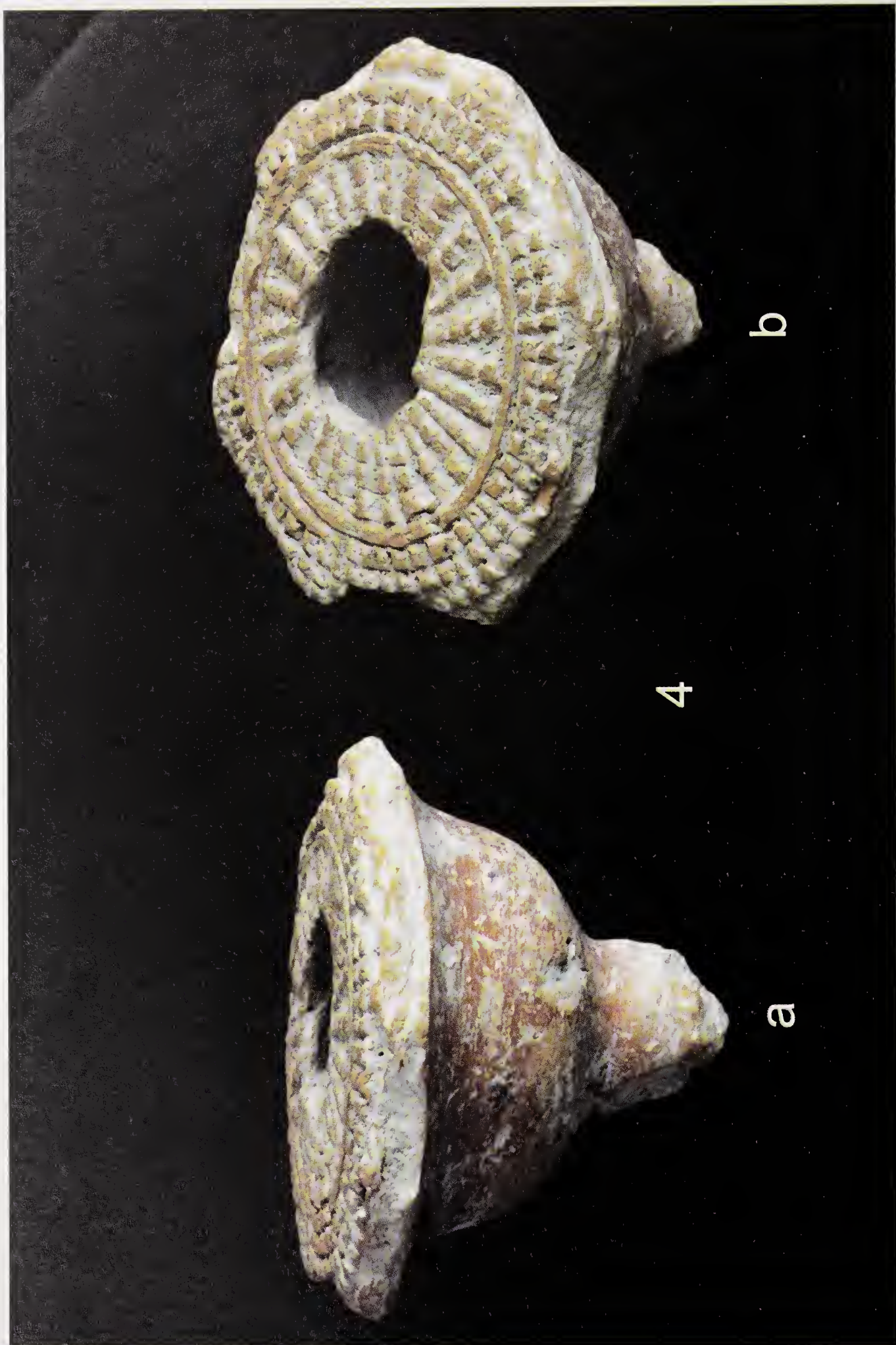
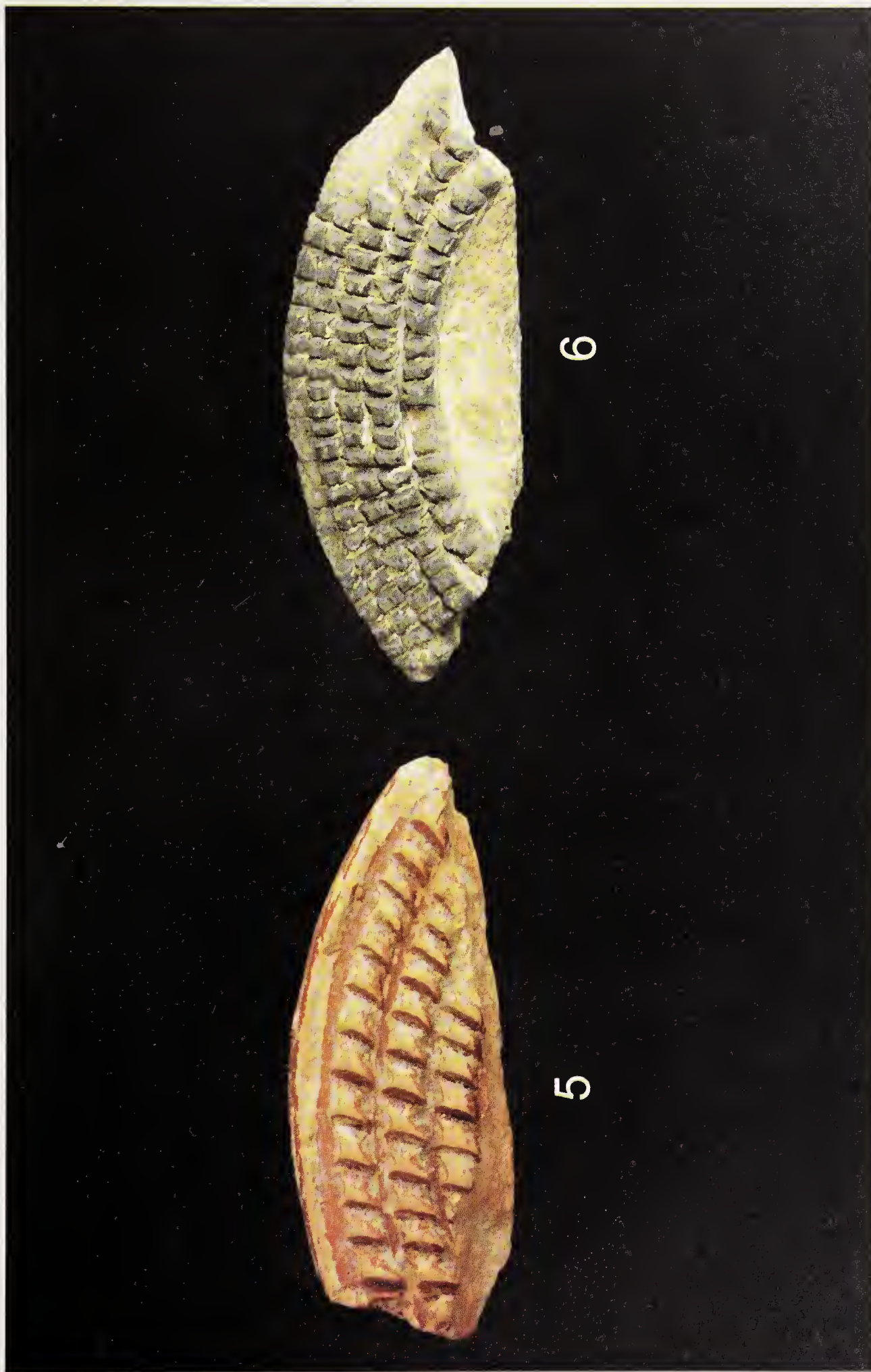
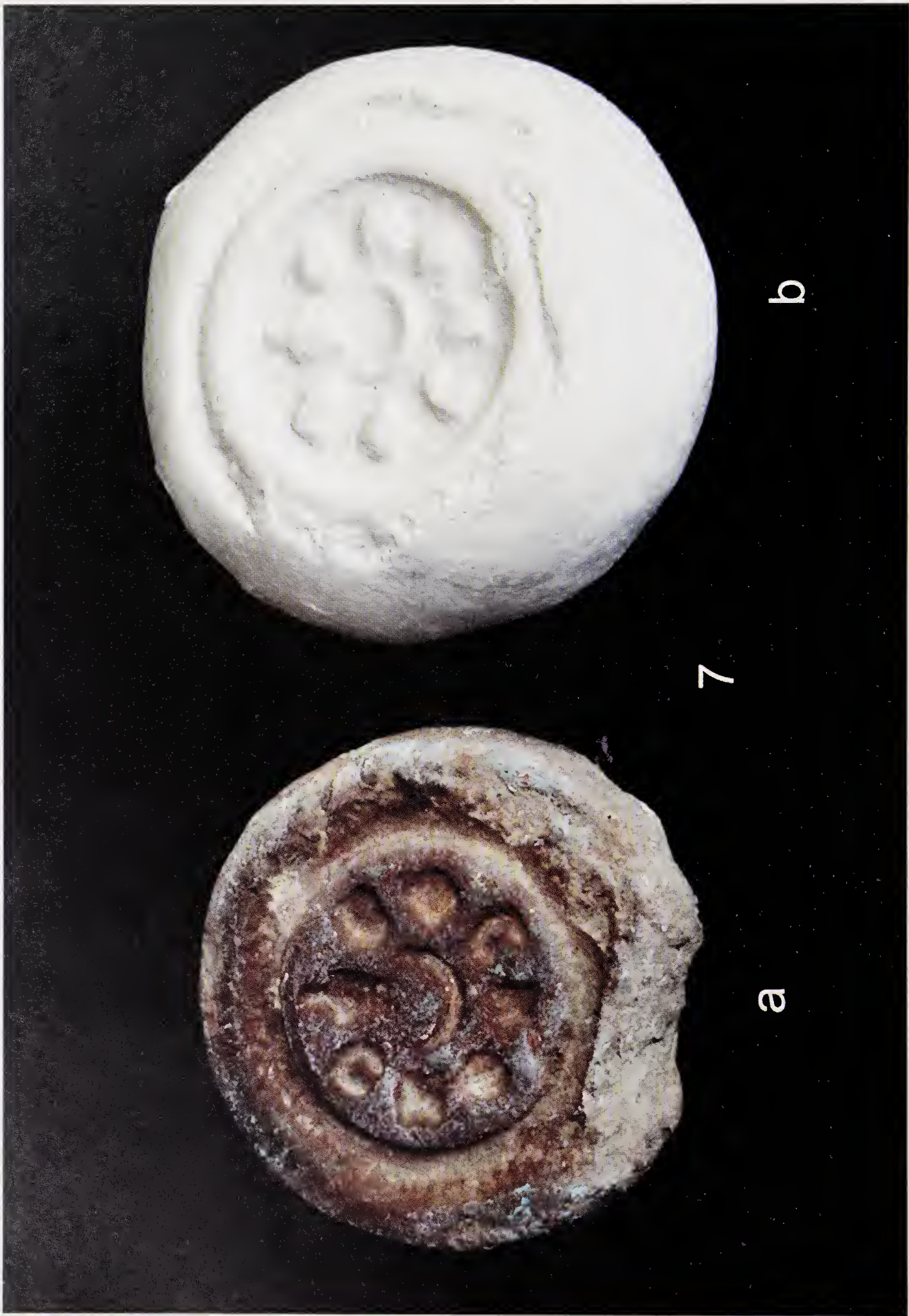
   Made of medium-grained clay and well fired, the specimen has a light red slip. Available height 54.15 mm; available diameter of the disc 76 mm.
   ALB-3, Sq YC2, Qd 2. Pit sealed by Layer 3, Sub-period IIA. Reg. No. 40.

5. (Pl. XXXII, 5) Fragment of the disc. It has the usual decoration of concentric bands which are incised.

   Made of fine-grained clay and well fired, it has a bright red slip. Available height 6.95 mm; reconstructed diameter 90 mm.
   ALB-3, Sq B1, Qds 1 and 2, Pit 2 sealed by Layer 3A. Sub-period IIA. Reg. No. 105.

6. (Pl. XXXII, 6) Fragment of another disc, with decoration similar to that in No. 5.

   Made of medium-grained clay, it has a grey core and greyish black slip. Available height 19.21mm; reconstructed diameter 90 mm.
   ALB-3, Sq ZB1, Qd 4, Layer 3A. Sub-period IIA. Reg. No. 139.

Pl. XXX Terracotta stamp, two views.

Pl. XXXI Terracotta stamp, two views.

Pl. XXXII Fragment of two terracotta stamps.

Pl. XXXIII Terracotta stamp : a, original; b, impression.

7. (Pl. XXXIII, a and b) This stamp is of a type different from the foregoing. It is solid and discular in shape and has no handle or orifice. View 'a' shows the stamp itself, while view 'b' shows its impression. The design consists of a crescent in the central part, with probably a square below it and an unidentified feature above it. On each side of this central design may be seen circular depressions.

   Made of medium-grained clay, it is well fired and red in colour. Diameter 36.34 mm; thickness 12.4 mm.
   ALB-3, Sq ZB1, Qd 1, Layer 1, Sub-period IIB. Reg. No. 134.

(ii) DABBERS

Dabbers are used by potters while shaping the pots. As necessary, the pots are beaten with the dabbers and then their surface is smoothened. The dabbers are made of medium/ coarse-grained clay and then fired to a reddish-brown surface. Sometimes a slip is also provided on the exterior. Shape-wise, these have two parts, a lower and an upper. While the lower part, which is usually bigger, is the one actually used for dabbing, the upper one is meant for handling during the course of operation. Four specimens were recovered, two of which are compete and two broken. All these come from Period II. The specimens are described below :

1. (Pl. XXXIV, 1). Dabber with conical lower part and a disc-like upper part. Though damaged, the bottom seems to have been convex. There is an incised notch-design running between the two parts.

   Made of medium-grained clay; though grey core, it is well fired and has a light red slip. Diameter 80.52 mm; height 65.22 mm.
   ALB-3, Sq B1, Qds 3 and 4, Pit sealed by Layer 2, Sub-period IIB. Reg. No. 230.

2. (Pl. XXXIV, 2). Dabber with conical lower part and disc-like upper part. The bottom is mildly convex.

Pl. XXXIV Terracotta dabbers.

Made of medium-grained clay, it is well fired and light-red in colour. Diameter 66.13 mm; height 63.97 mm.

ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 61.

3. (Pl. XXXIV, 3). This specimen is vertically damaged and less than half has survived. While the conical profile and convex base of the lower part are clearly identifiable, the shape of the upper part is indefinite.

   Made of coarse- grained clay, it is well fired. It also shows the remains of a brownish slip. A mild groove may also be noticed on the exterior of the lower part. Diameter 96 mm; height 60.95 mm.

   ALB-3, Sq A1, Qd 4, Layer 2, Sub-period IIB. Reg. No. 43.

4. (Pl. XXXIV, 4). This specimen is much bigger than the other three. Maybe it was used for large-sized pots. Though it is vertically broken, the shape can nonetheless be made out. As in the previous two cases, the lower part has a conical profile, while the upper one is discular. The bottom of the former is slightly convex.

   Made of coarse- grained clay, it is fairly well fired, though because of its large size, the core remains smoky. There is a light-brown slip. Diameter 120 mm; height 102.07 mm.

   ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 196.

Metal Objects*

The excavations at Bharadvāja Āśrama yielded 70 metal objects from Period II. Out of these, only four objects are made of copper and the remaining are of iron.

No metal object was found from Period I.

(i) Copper Objects

The copper objects include an intact antimony rod of usual features, a fragment of a bangle with circular section and a fragment of a bowl with convex sides. The fourth one, an unidentified tiny fragment, not illustrated here, was sent for chemical analysis. Table 1 presents the stratigraphical position of the copper objects.

Table 1
Stratigraphical Position of Copper Objects

Object / Period	Antimony Rod	Bangle fragment	Bowl fragment	Unidentified	Total
Period II B	1	1	1	1	4

Selected specimens are described below:-

Fig. 35 and Pl. XXXV

1. Antimony rod: intact; thickened at both ends with pointed tips; solid; circular in section.

   Measurements: length 120.53 mm; maximum thickness 6.32 mm; minimum thickness 2.73 mm

   ALB-3, Sq ZB1, Qd 4, Layer 2, Sub-period IIB. Reg. No. 98.

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* Under my guidance, this chapter has been written by **Shri Vishnu Kant**, Assistant Superintending Archaeologist .
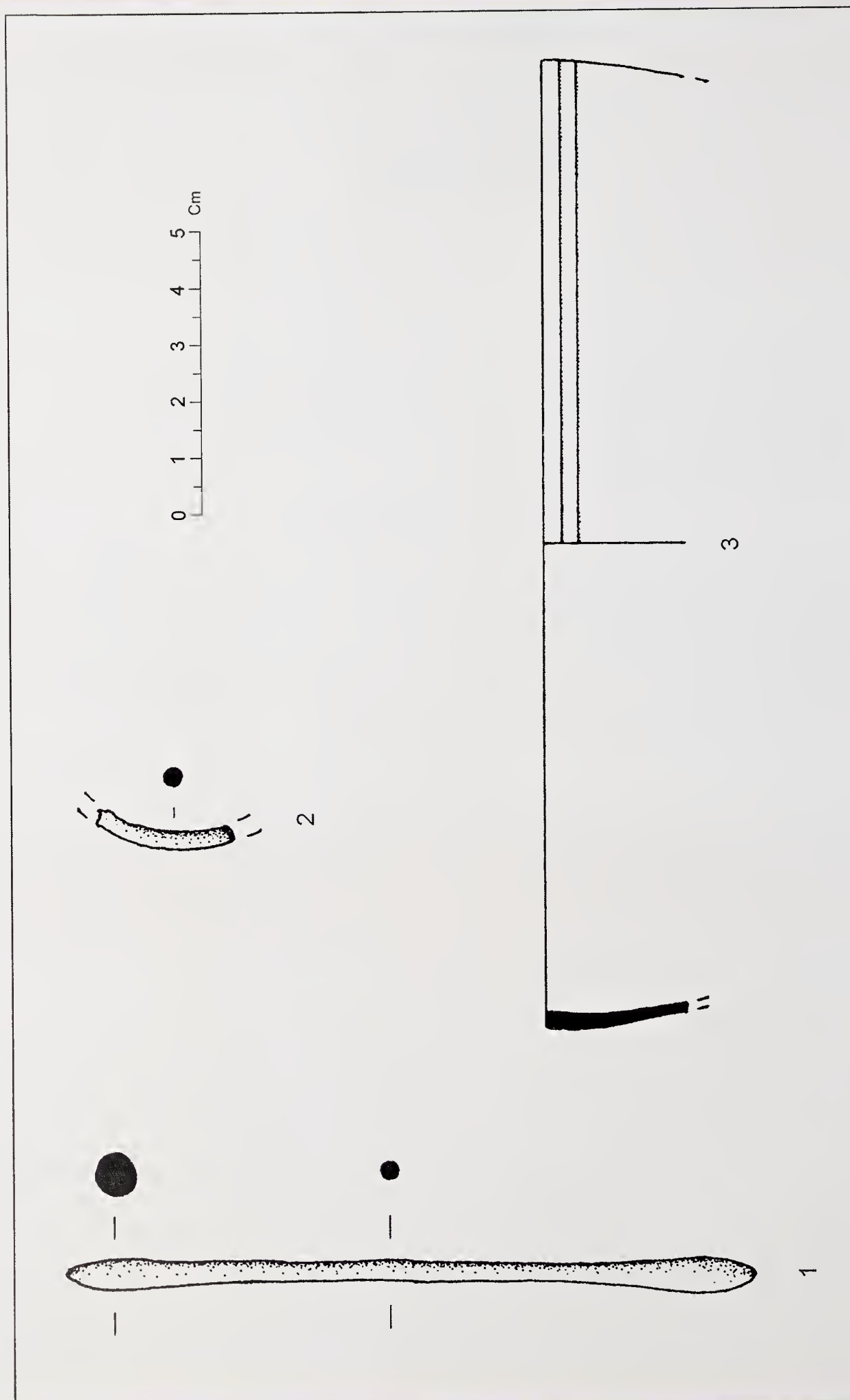
Fig. 35 Copper objects: 1, antimony rod; 2 and 3, fragments respectively of a bangle and bowl.

Pl. XXXV Copper objects: 1, antimony rod; 2 and 3, fragments respectively of a bangle and bowl.

2. Fragment of a bangle: circular in section.

   Measurements: diameter of the bangle 50 mm; thickness 3.39 mm; available length 23.61mm

   ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 74.

3. Fragment of a bowl: made of a thin sheet; square-cut rim with a grooved exterior, convex sides.

   Measurements: diameter 170 mm; thickness 3.3 mm; available height 23.43 mm

   ALB-3, Sq B1, Qds 3 and 4, Layer 2, Sub-period IIB. Reg. No. 220.

(ii) Iron Objects

The iron objects were recovered in a larger quantity in comparison to the copper objects. These include nails, knives, sickles, an arrow-head, needles, a ring, a bell and other miscellaneous objects, besides slags. The stratigraphical distribution of these objects is shown in Table 2. The nails are present in a large number. It is further noted that the frequency of the iron objects was much greater in Square B1 and ZB1 as compared to others.

Table 2

Stratigraphical Position of Iron Objects

Objects / Periods	Nail	Knife	Sickle	Arrow-head	Ring	Bell	Slag	Hook/ Chain (?)	Angle	Needle	Wire	Flat bar	Chisel	Sheet	Unidentified	Total
Sub-period IIB	19	6	2	-	-	1	1	2	2	2	-	-	1	5	1	42
Sub-period IIA	11	-	-	1	1	-	1	-	1	-	2	1	-	3	3	24
Total	30	6	2	1	1	1	2	2	3	2	2	1	1	8	4	66
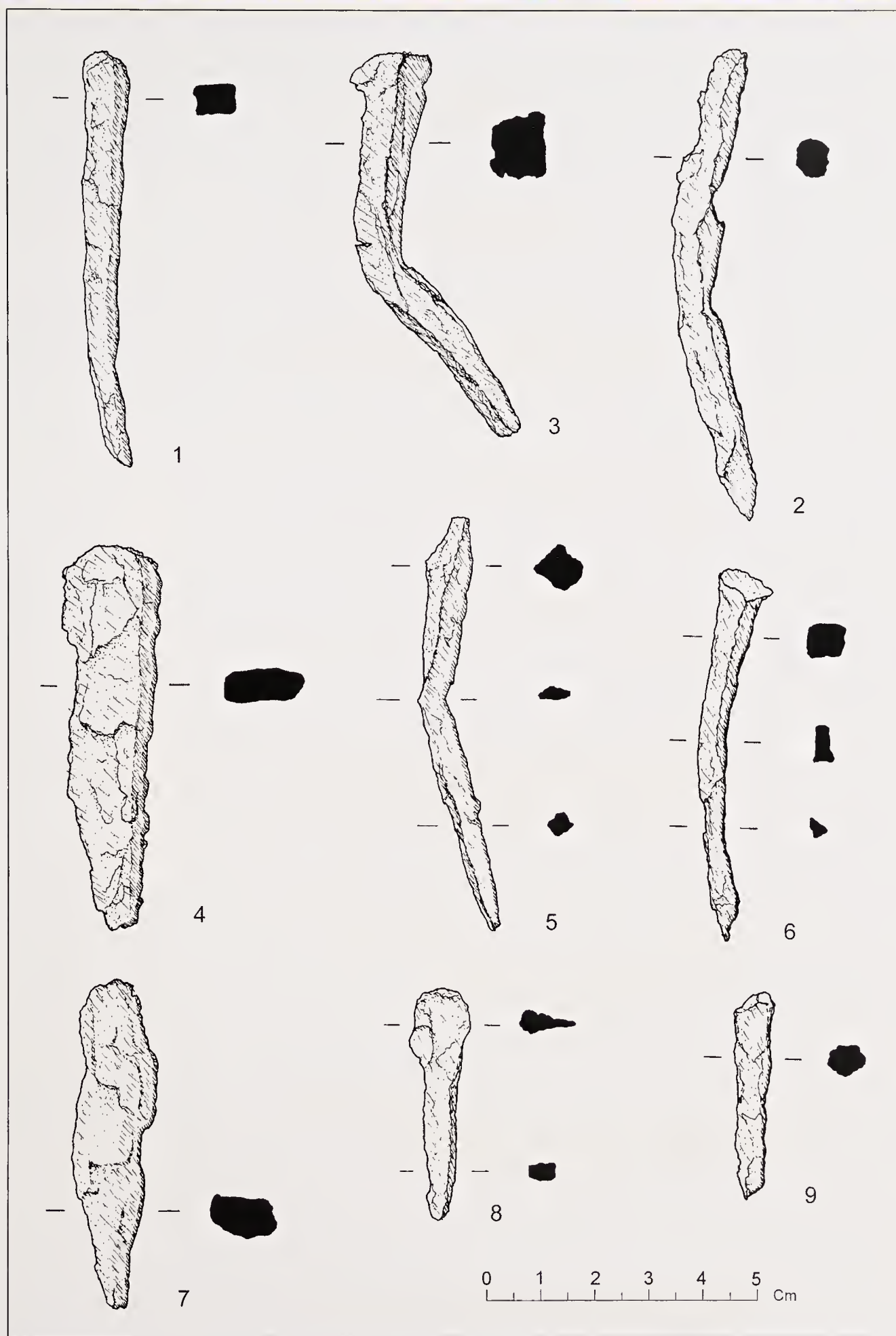
Fig. 36 Iron nails

Pl. XXXVI Iron nails.

Selected specimens are described below:-

Fig. 36 and Pl. XXXVI

1. Nail: head broken; rectangular section; body tapering to a pointed end.

   Measurements: length 84.49 mm; maximum thickness 7.58 mm

   ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 78.

2. Nail: broken top; rectangular section; body tapering to a pointed end; mild curve at the middle.

   Measurements: length 75.12 mm; maximum thickness 7.36 mm

   ALB-3, Sq ZB1, Qd 1, Layer 2, Sub-period IIB. Reg. No. 175.

3. Nail: somewhat wide head; rectangular section; body tapering to a pointed end; angular turn at the middle.

   Measurements: length 71.35 mm; maximum thickness 13.56 mm

   ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 81.

4. Nail: made of flat bar; flat and wide head; rectangular section; body tapering to a pointed end.

   Measurements: length 70.34 mm; maximum thickness 17.75 mm

   ALB-3, Sq ZB1, Qd 4, Layer 3A, Sub-period IIA. Reg. No. 130.

5. Nail: somewhat thickened head; rectangular section; body tapering to a pointed end; an angular turn at the middle.

   Measurements: length 75.85 mm; maximum thickness 7.94 mm

   ALB-3, Sq ZB1, Qd 1, Layer 1A, Sub-period IIB. Reg. No. 168.

6. Nail: somewhat splayed-out head; rectangular section; body tapering to a pointed end.

   Measurements: length 68.07 mm; breadth at the head 7.38 mm

   ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 79.

7. Nail: head missing; thick and roughly rectangular section; body tapering to a pointed end.

   Measurements: length 59.12 mm; maximum thickness 13.11 mm
   ALB-3, Sq ZB1, Qd 4, Layer 3A, Sub-period IIA. Reg. No. 90.

8. Nail: small sized; with a somewhat broad and flat head; square section; body tapering to a pointed end.

   Measurements: length 41.73 mm; thickness 4.40 mm; breadth at the head 10.79 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 2, Sub-period IIB. Reg. No. 55.

9. Nail: small sized; with somewhat wide head; roughly rectangular section; body tapering to a pointed end.

   Measurements: length 37.18 mm; thickness 7.55 mm
   ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 62.

Fig. 37 and Pl. XXXVII

1. Nail: long; rectangular folded head; rectangular section; body tapering to a pointed end.

   Measurements: length 118.17 mm; breadth at the head 17.52 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 2, Sub-period IIB. Reg. No. 87.

2. Nail: splayed-out; wide head; flat rectangular section; body tapering to a pointed end.

   Measurements: length 81.31 mm; thickness 7.74 mm; breadth of the head 18.02mm
   ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 228.

3. Nail: splayed-out head; rectangular section; body tapering to a pointed end.

   Measurements: length 75.81mm; maximum thickness 6.37 mm; breadth at the head 12.12 mm
   ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 178.
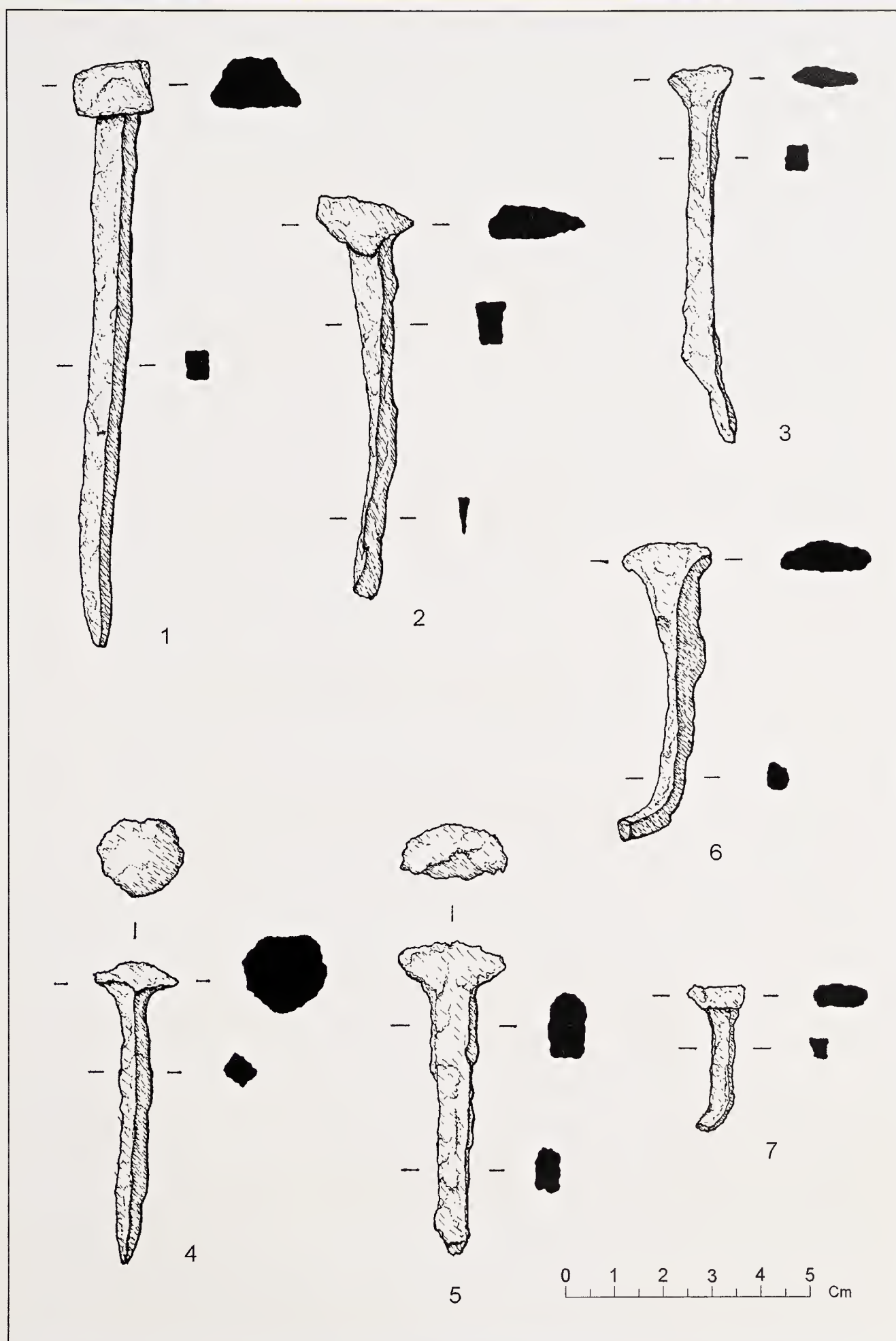
Fig. 37 Iron nails

Pl. XXXVII Iron nails.

4. Nail: with umbrella-like circular head, rectangular section; body tapering to a pointed end.

   Measurements: length 60.22 mm; diameter of the head 16.43 mm; body thickness 7 mm
   ALB-3, Sq A1, Qd 1, Layer 2B, Sub-period IIB. Reg. No. 33.

5. Nail: wide and tapering head; rectangular section; body tapering to a pointed end.

   Measurements: length 62.22 mm; breadth at the head 20.59 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 2, Sub-period IIB. Reg. No. 96.

6. Nail: flat and wide head, rectangular section; body presently twisted; pointed end.

   Measurements: length 58.78 mm; thickness 7 mm; breadth of the head 12.34 mm
   ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 226.

7. Nail: small sized; a wide and folded head; rectangular section; body tapering; twisted and broken end.

   Measurements: length 29.01 mm; thickness 4.74 mm; breadth at the head 10.85 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 1A, Sub-period IIB. Reg. No. 76.

Fig. 38 and Pl. XXXVIII

1. Tanged knife: tip probably damaged; thin triangular section of the blade; sharp cutting edge; back slightly curved; straight and tapering tang.

   Measurements: length 193.46 mm; thickness at the back 6.67 mm; breadth 27.22 mm
   ALB-3, Sq YC3, Qd 1, Layer 1, Sub-period IIB. Reg. No. 38.

2. Sickle(?): curved blade; round tip and thin rectangular section; it has a grooved line along the outer edge with equidistant three or more small holes.

   Measurements: length 118.37 mm; thickness 3.62 mm; breadth 26.58 mm
   ALB-3, Sq A1, Qd 4, Layer 1, Sub-period IIB. Reg. No. 35.
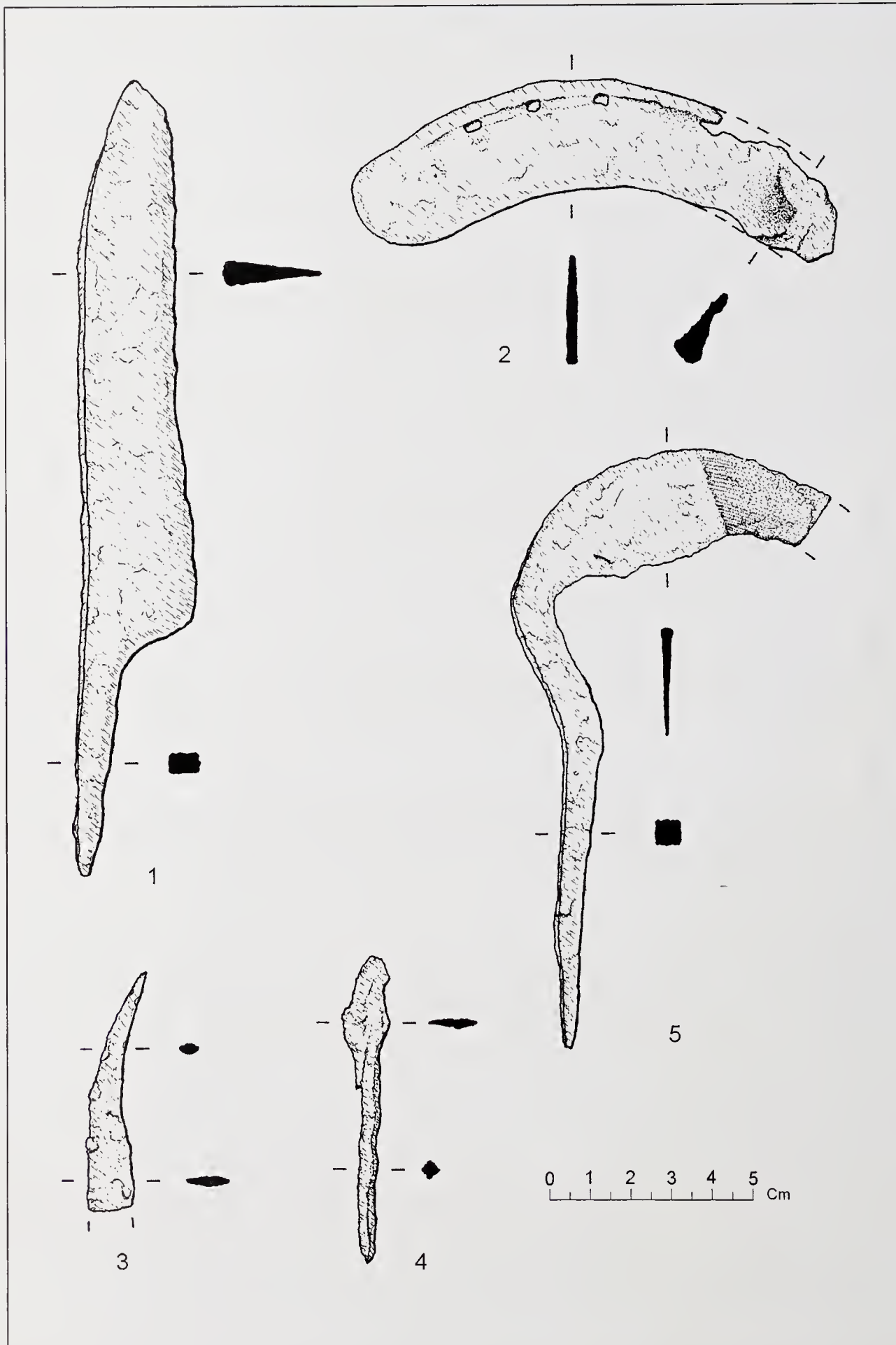
Fig. 38 Other iron objects: 1 & 3, knife: 2 & 5, sickle; and 4, arrow head.

Pl. XXXVIII Other iron objects: 1 & 3, knife; 2 & 5, sickle; and 4, arrow head.

3. Knife: fragmentary; made of a flat bar; thin rectangular section; body tapering to a pointed tip.

   Measurements: available length 59.78 mm; breadth 11.81mm

   ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2, Sub-period IIB. Reg. No. 122.

4. Arrow-head: lonzenge-shaped flat blade; square sectioned tang.

   Measurements: length 74.10 mm; breadth of blade 11.59 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 107.

5. Sickle: curved blade with triangular section; top missing; partly curved; long tang with pointed end.

   Measurements: length 147.87 mm; thickness of tang 7.69 mm; breadth of the blade 26.23 mm

   ALB-3, Sq B1, Qds 3 and 4, Layer 2, Sub-period IIB. Reg. No. 167.

Fig. 39 and Pl. XXXIX

1. Ring: made of thick and flat bar with evidence of equidistantly fixed four or five nails/ rivets in between the inner and outer circumferences; rectangular in section.

   Measurements: diameter 87.30 mm; thickness 7.76 mm; breadth 19.83 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 53.

2. Bell: fragmentary; with a loop handle at the top for suspension. It is affixed to an inverted cup having a centrally placed hanging 'tongue' for musical sound; rectangular-sectioned loop handle; cup made of a thin sheet.

   Measurements: Loop handle: height 32 mm; breadth 8.47 mm

   Available total height of the bell: 63.87 mm; breadth 43.46 mm

   ALB-3, Sq ZA1, Qd 4, 80 cm below surface, Sub-period IIB. Reg. No. 58.
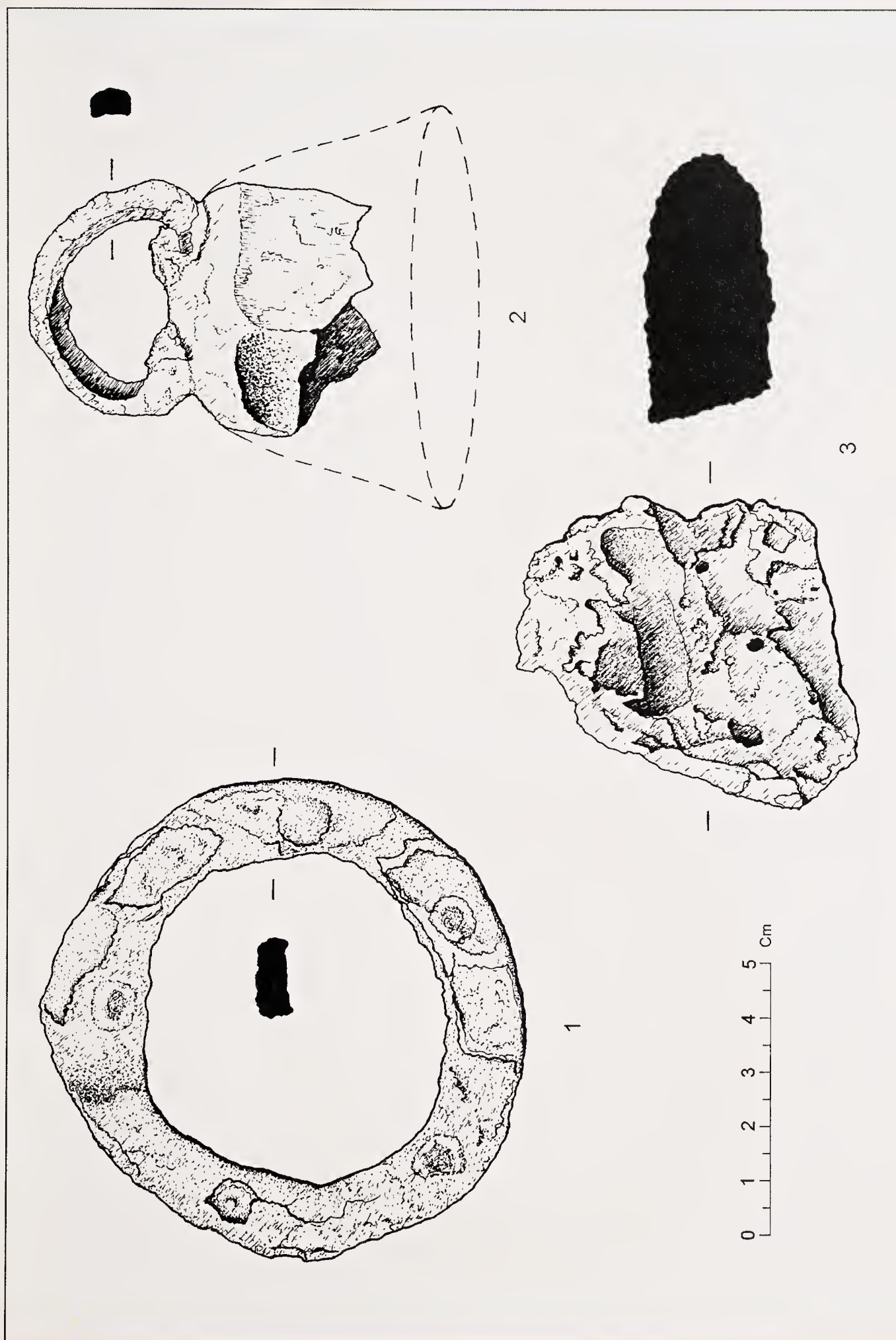
Fig. 39 Other iron objects: 1. ring: 2, bell; and 3, slag-fragment.

Pl. XXXIX Other iron objects: 1, ring; 2, bell; and 3, slag-fragment.

3. Slag: piece of an iron slag.

   Measurements: length 67.05 mm; thickness 33.89 mm; breadth 51.90 mm

   ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 185.

Fig. 40 and Pl. XL

1. Hook: made of iron rod of circular section, curved hook with a drooping end.

   Measurements: total length of the rod 270 mm; diameter 5.75 mm

   ALB-3, Sq A1, Qd 3, Layer 1, Sub-period IIB. Reg. No. 44.

2. Looped hook of a chain, made of wire of circular section.

   Measurements: length 30.98 mm; diameter 3.12 mm

   ALB-3, Sq B1, Qds 3 and 4, Layer 1A, Sub-period IIB. Reg. No. 149.

3. Angular fragment: right-angled corner part of a frame(?), made of iron rod of a rectangular section.

   Measurements: available length 19.8 mm; breadth 18 mm; thickness of the rod 5.17 mm

   ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 80.

4. Angular fragment: perhaps part of a frame; made of rod of circular section.

   Measurements: available total length 87 mm; diameter of the rod 5.02 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 1A, Sub-period IIB. Reg. No. 65.

5. Angle: made of circular rod with a curved profile; flat end on one side and an obliquely-cut sharp end on another; circular section.

   Measurements: total length 178 mm; diameter of the rod 70 mm

   ALB-3, Sq YC3, Qd 1, 25 cm below surface, Sub-period IIB. Reg. No. 37.
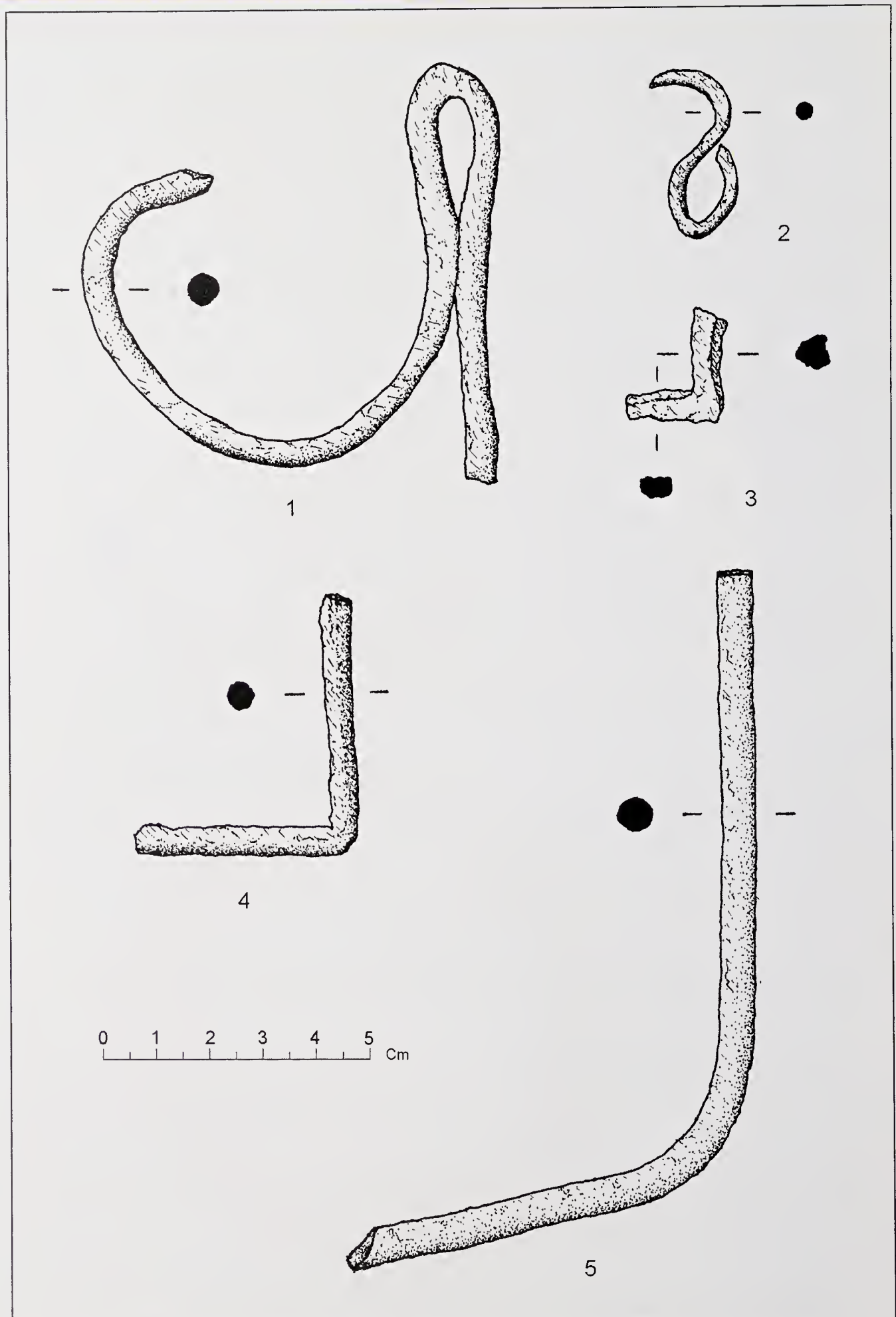
Fig. 40 Other iron objects: 1 & 2, hooks, 3, 4 & 5, angle/angle-fragments.

Pl. XL Other iron objects: 1 & 2, hooks, 3, 4 & 5, angle/angle-fragments.

Fig. 41 and Pl. XLI

1. Needle: long needle (called *sīyā* in Hindi) with a broken eye for threading formed by piercing the broader end; fluted body tapering to a pointed end.

   Measurements: length 124.75 mm; thickness 7.04 mm

   ALB-3, Sq A2, Qd 4, Layer 2, Sub-period IIB. Reg. No. 4.

2. Needle: long needle with a circular sectioned body tapering to a pointed end. Eye part is missing.

   Measurements: length 114.09 mm; diameter 4.58 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 2, Sub-period IIB. Reg. No. 88.

3. Piece of a needle with square section and a curved end.

   Measurements: length 81.62 mm; thickness 4.01 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 216 (i).

4. Small piece of a thin wire with a circular section.

   Measurements: length 42.73 mm; diameter 1.91 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 216(ii).

5. Small piece of a thin and flat bar with a rectangular section and a curved end.

   Measurements: length 57.35 mm; breadth 4.33 mm; thickness 1.92 mm

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 216 (iii).

6. Chisel: with pointed working tip, rectangular section; body tapering towards both ends.

   Measurements: length 73.44 mm; breadth 7.41 mm; thickness 6.11 mm

   ALB-3, Sq B1, Qds 3 and 4, Layer 1A, Sub-period IIB. Reg. No. 154.
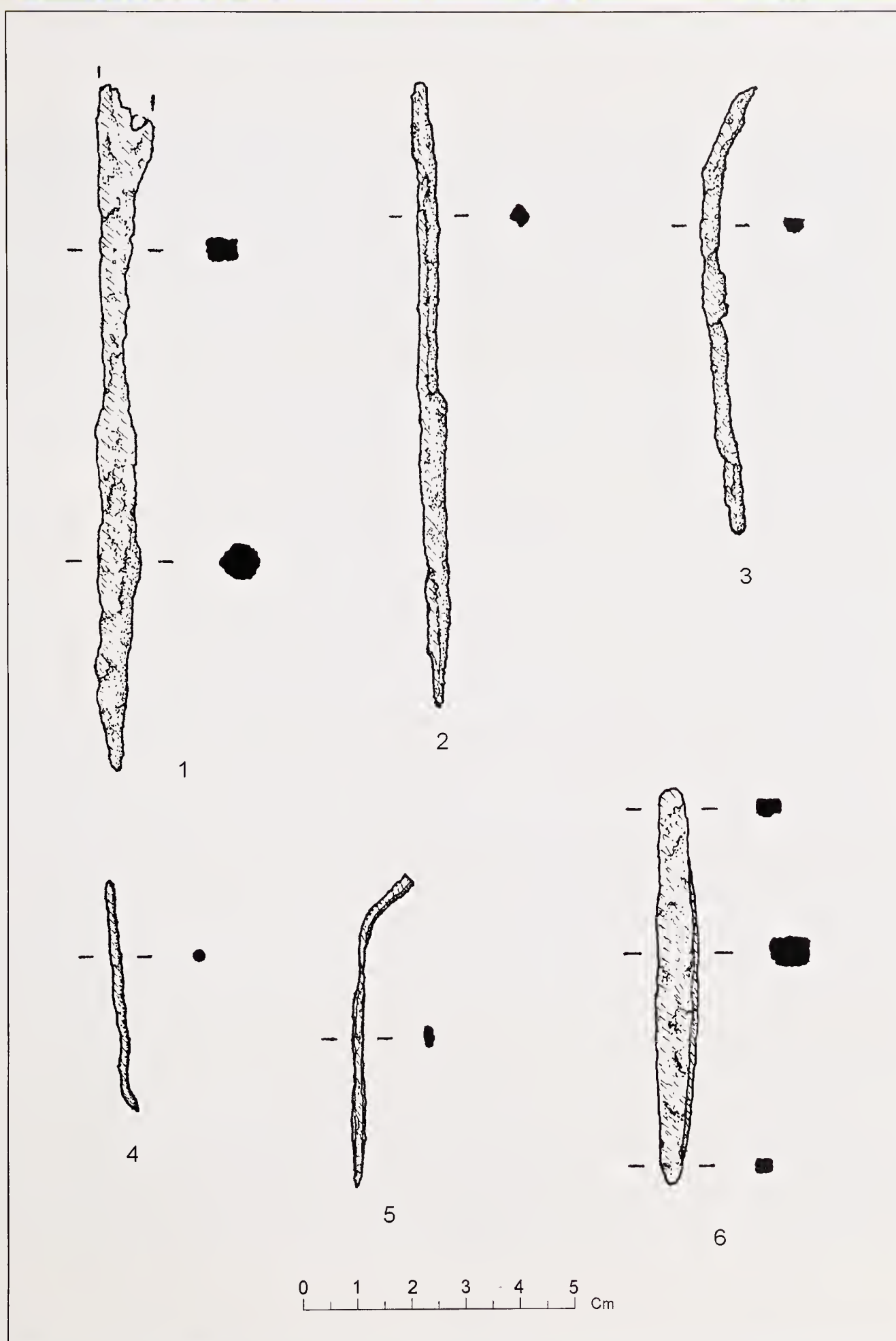
Fig. 41 Other iron objects: 1 - 3, needles; 4, wire; 5, flat bar, and 6, chisel.

Pl. XLI Other iron objects: 1 - 3, needles; 4, wire; 5, flat bar, and 6, chisel.

Fig. 42 and Pl. XLII

1. Fragment of an iron sheet: flat and thin sectioned sheet with sharp edges and a round corner.

   Measurements: length 48 mm; breadth 45 mm; thickness 12 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 1A, Sub-period IIB. Reg. No. 66.

2. Fragment of an iron sheet with folded rim, round corner and thin rectangular section.

   Measurements: available length 90.17 mm; breadth 10.27 mm; thickness 2.86 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 2, Sub-period IIB. Reg. No. 87.

3. Fragment of a thin sheet, folded on both edges and thin curved section.

   Measurements: length 33.30 mm; breadth 12.98 mm; thickness 4.50 mm
   ALB-3, Sq B1, Qds 1 and 2, Layer 1A, Sub-period IIB. Reg. No. 75(iii).

4. Fragment of a folded sheet, with U-shaped section.

   Measurements: available length 25.09 mm; breadth 21.64 mm; thickness 3.91 mm
   ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A, Sub-period IIB. Reg. No. 163(1).

5. Fragment of a sheet with a folded edge and thin rectangular section.

   Measurements: available length 28.85 mm; breadth 26.23 mm; thickness 1.56 mm
   ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A, Sub-period IIB. Reg. No. 163(2).

6. Fragment of a sheet with a thin, rectangular section.

   Measurements: available length 31.22 mm; breadth 19.29 mm; thickness 1.31 mm
   ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A, Sub-period IIB. Reg. No. 163(3).
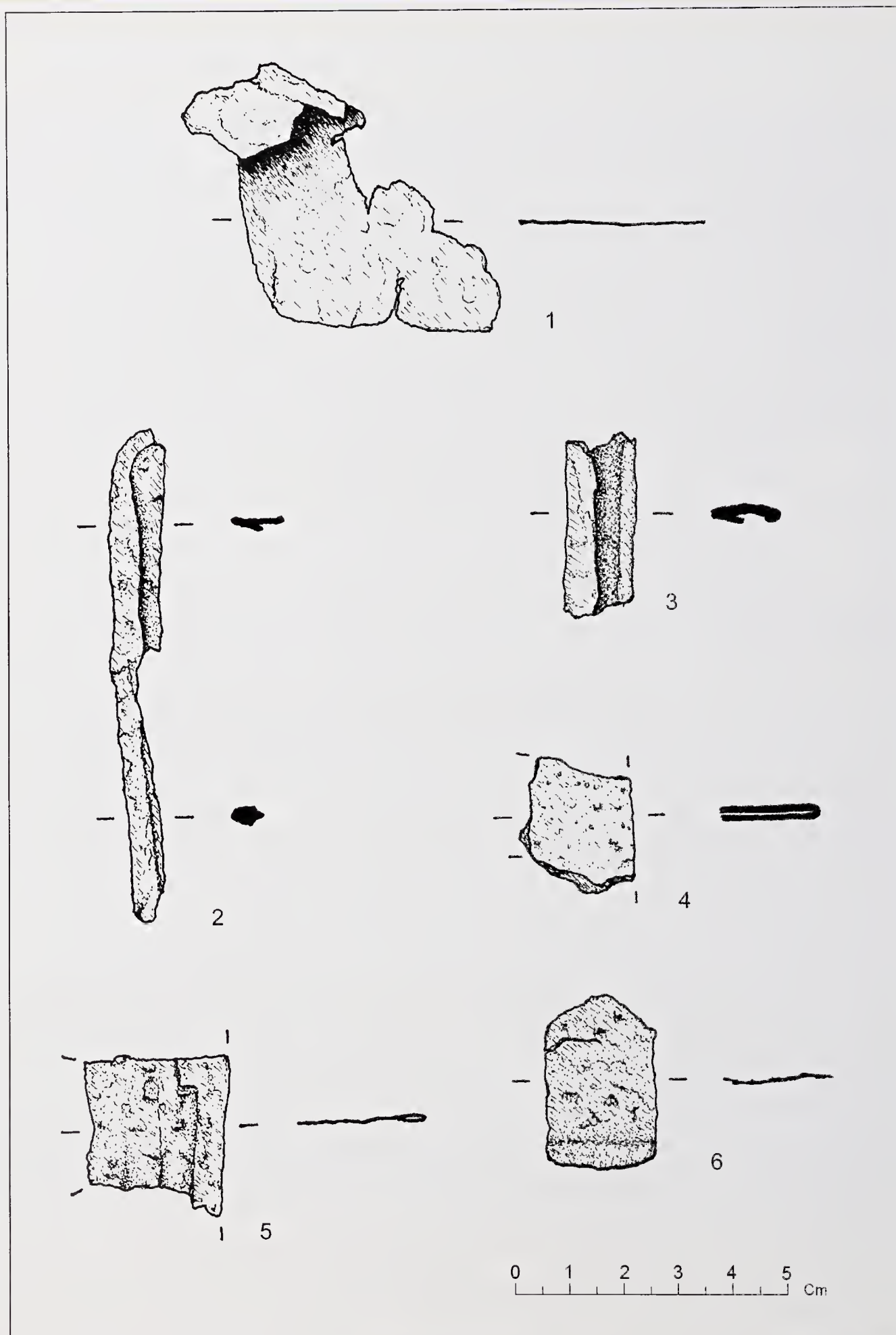
Fig. 42 Fragments of iron sheets.

Pl. XLII Fragments of iron sheets.

Pl. XLIII

1. A heap of the collected pieces of iron sheets in a large quantity.

   ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1, Sub-period IIB. Reg. No. 197.

Pl. XLIV

1. Some selected pieces from the heap shown on Pl. XLIII. Some of these have round corners.

   ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1, Sub-period IIB. Reg. No. 197.

Pl. XLIII A heap of collected iron sheets.

Pl. XLIV Some selected pieces from the heap (Pl. XLIII).

Other Finds*

Chapter IX

(i) BEADS

Introduction

The excavations at Bharadvāja Āśrama yielded only one bead from Period I and twenty-five beads from Period II. The material of these beads includes semi-precious stones and terracotta. While semi-precious stones were employed sparingly, terracotta was more common.

Beads of Semi-precious stones

Only two beads are made of semi-precious stones, of which one is of agate and the other rock crystal. Shape-wise, the first is barrel-shaped, whereas the other is rectangular in profile. The stratigraphic position of both the beads is shown in Table 1.

Table 1

Stratigraphic Position of Beads of Semi-precious Stones

Object / Period	Barrel-shaped agate bead	Rectangular crystal bead	Total
Sub-Period IIA	1	1	2

The following are the details of these beads:

Semi-precious Stone Beads (Fig. 43 and Pl. XLV)

1. Bead of banded agate: standard barrel in shape, oval in section, longitudinal central perforation.

   Measurements: Length 14.27 mm; diameter 11.09 mm; diameter of the hole 3.06-3.51 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 186.

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* Under my guidance, this chapter has been written by **Shri Vishnu Kant**, Assistant Superintending Archaeologist.

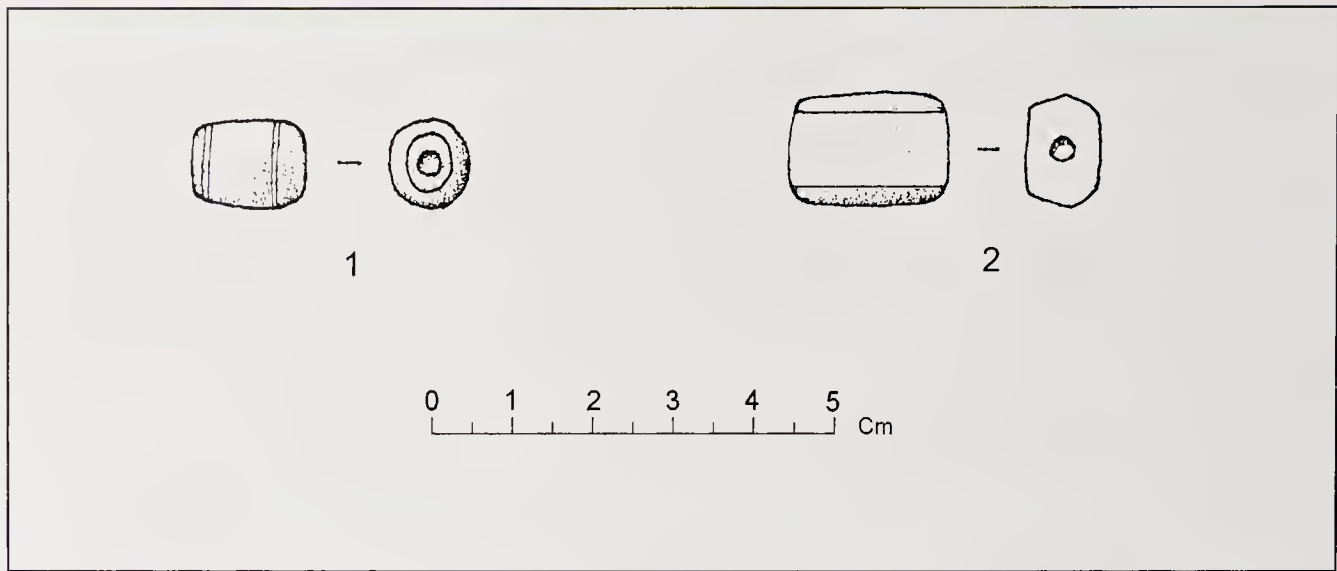



Fig. 43 Beads of semi-precious stones: 1, agate, and 2, crystal.

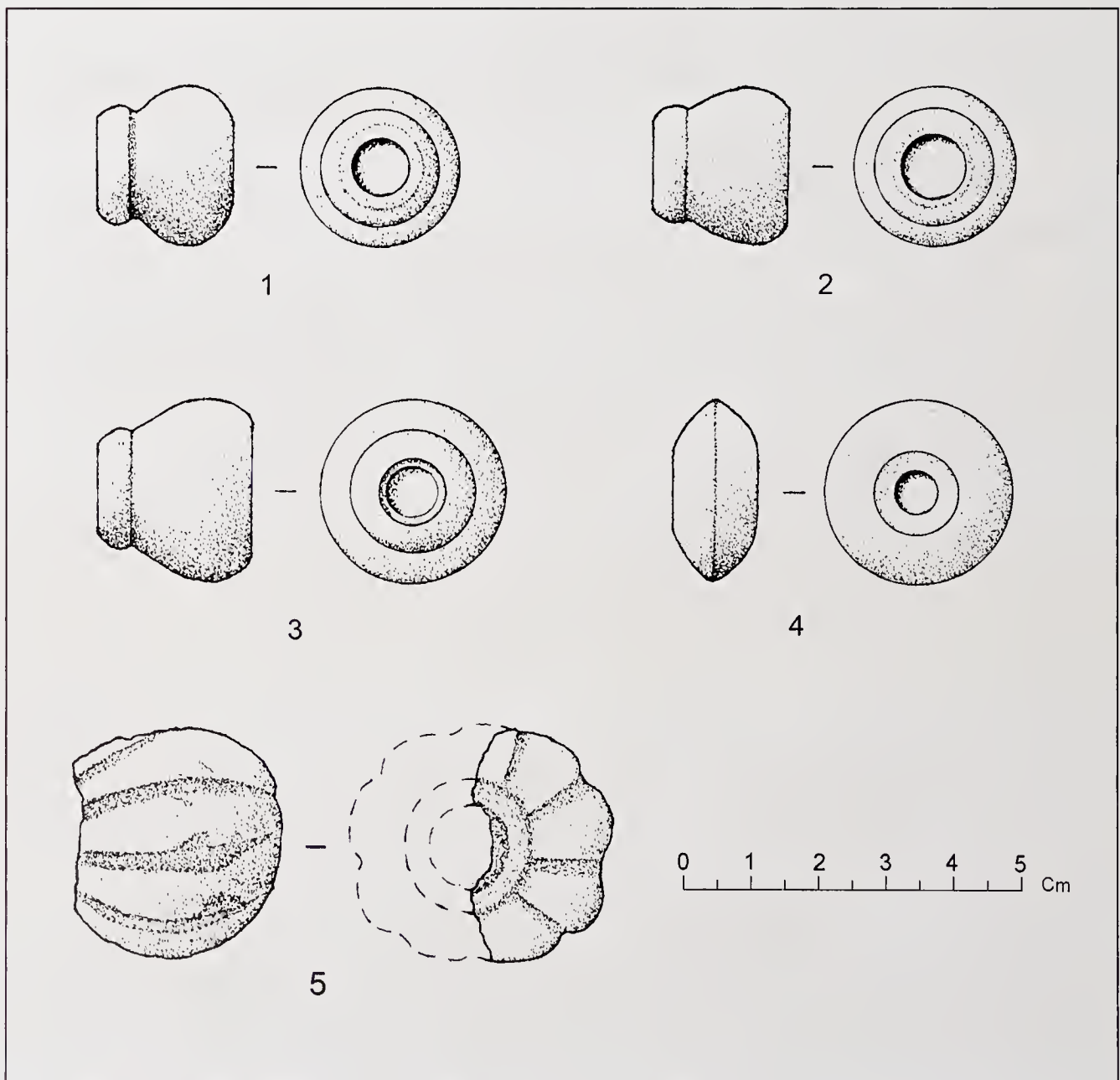
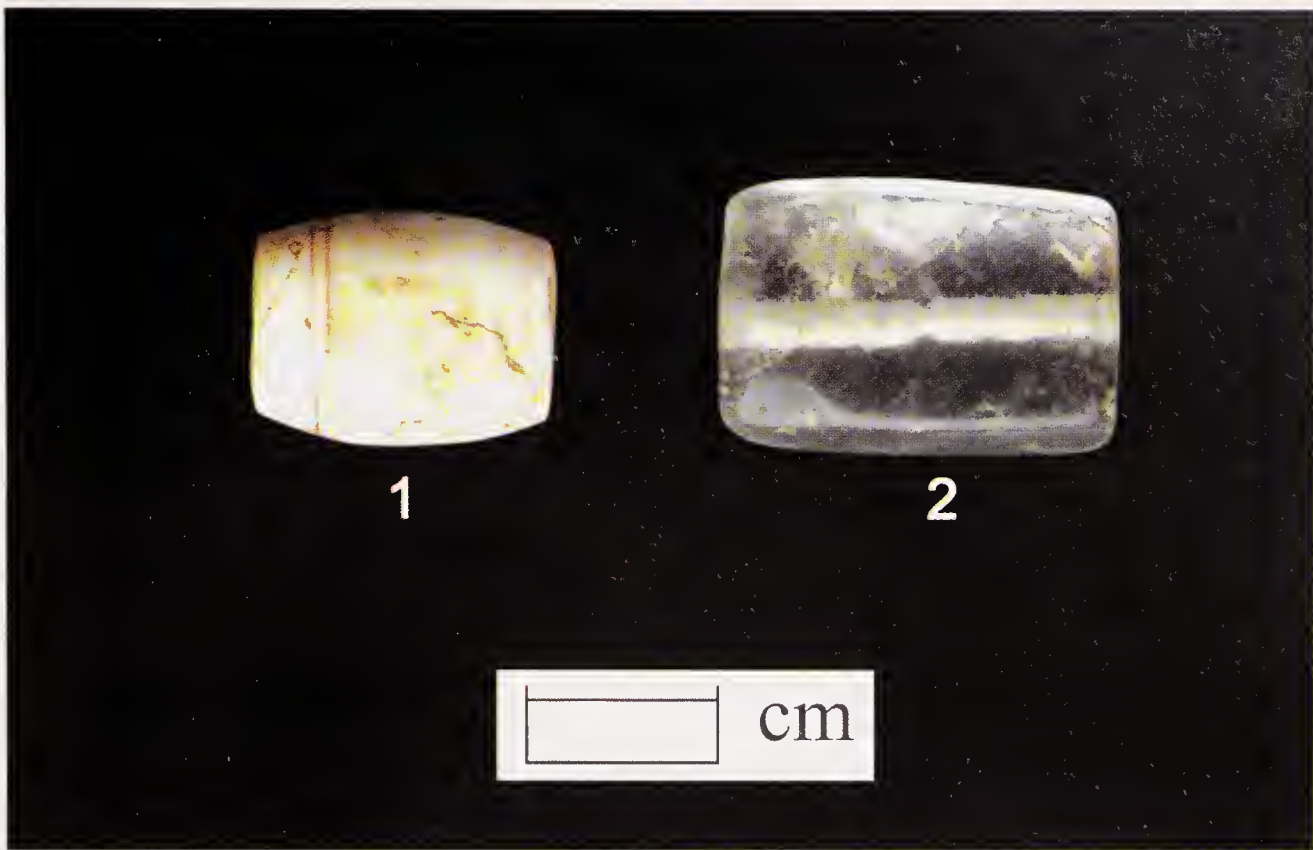
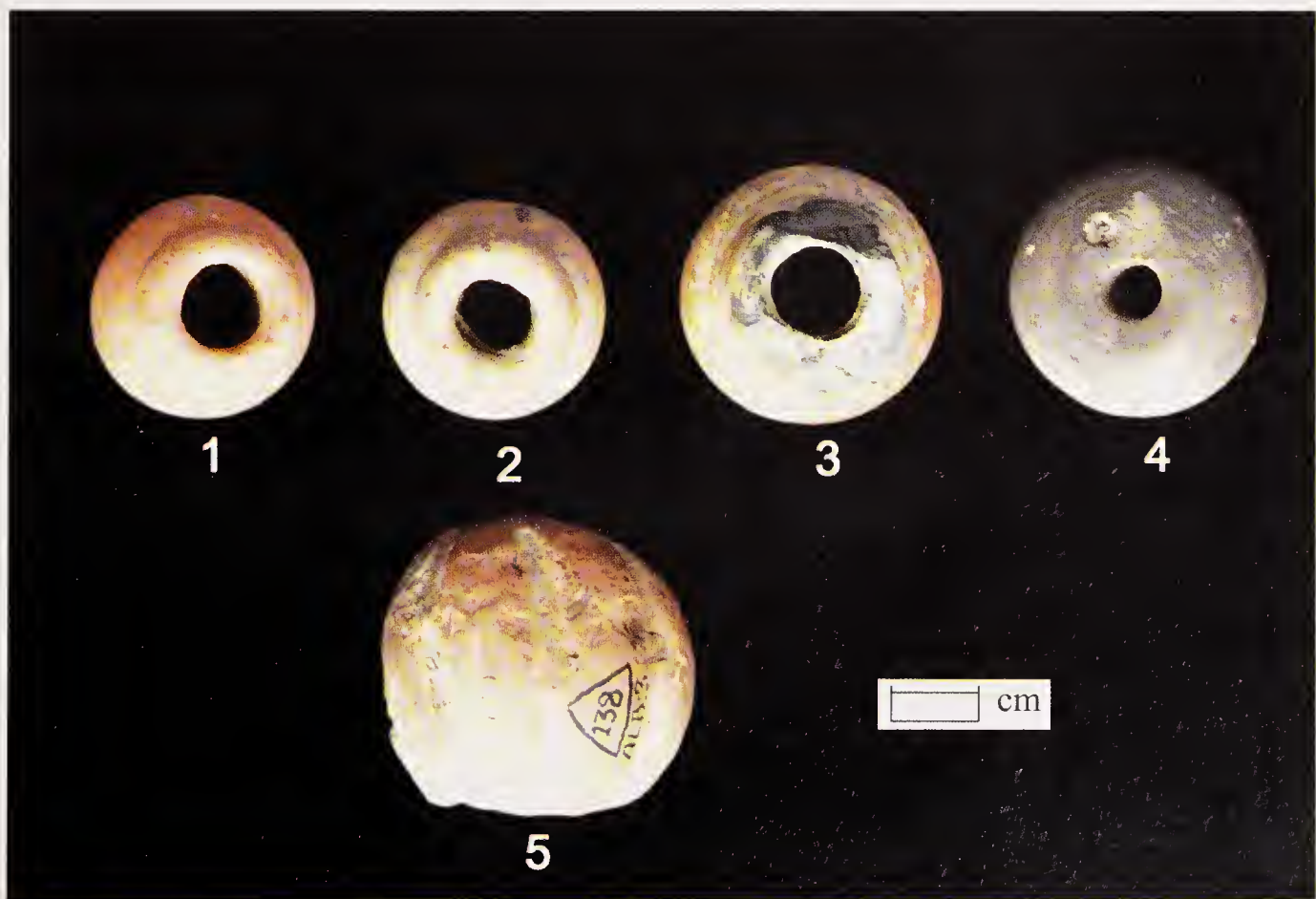



Fig. 44 Terracotta beads: 1 – 3, ghaṭa-shaped; 4, bi-conical; and 5, āmalaka-shaped.

Pl. XLV Beads of semi-precious stones: 1, agate; and 2, crystal

Pl. XLVI Terracotta beads: 1-3, ghaṭa-shaped; 4, bi-conical; and 5, āmalaka-shaped.

2. Crystal bead: rectangular in profile and hexagonal in section, small longitudinal central perforation.

   Measurements: Length 18.83 mm; breadth 13.07 mm; thickness 8.46 mm; diameter of the hole 2.79 mm.

   ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 131.

Terracotta Beads

There are twenty-four terracotta beads. These are *ghaṭa*-shaped, areca-nut-shaped and bi-conical, the areca-nut-shaped beads being in a larger number. We also include here a specimen which is *āmalaka*-shaped in profile, but it is not clear if it functioned as a bead. The quantity of these beads and their stratigraphical contexts are given below in Table 2.

Table 2

Stratigraphic Position of Terracotta Beads

Object / Period	Shape				
	Bi-conical	*Ghaṭa*	Areca-nut	*Āmalaka*	Total
Period I	-	1	-	-	1
Period II					
Sub-period II A	1	2	7	-	10
Sub-period II B	-	-	12	1	13
				Total	24

The following are the details of selected beads:

Fig. 44 and Pl. XLVI

1. *Ghaṭa*-shaped bead: globular body, flat base, large central perforation; well fired, dull red in colour.

   Measurements: Height 20.08 mm; diameter 23.43 mm; diameter of the hole 9.41-11.34 mm.

   ALB-3, Sq A1, Qd 2, Layer 3, Sub-period IIA. Reg. No. 10.

2. *Ghaṭa*-shaped bead: globular body, large flattish base, central perforation; well fired, red in colour.

   Measurements: Height 19.7 mm; diameter 23.27 mm; diameter of the hole 9.30-13.12 mm.
   ALB-3, Sq YC2, Qd 2, Layer 4, Period I. Reg. No. 22.

3. *Ghaṭa*-shaped bead: broken mouth, mildly grooved shoulder, globular body, large flat base, large central perforation; not so well fired, black core, red slipped.

   Measurements: Height 22.82 mm; diameter 27.32 mm; diameter of the hole 10.59-13.12 mm.
   ALB-3, Sq YC2, Qd 2, Layer 3, Sub-period IIA. Reg. No. 28.

4. Bi-conical bead: truncated, circular, central perforation; not so well fired, dull greyish-red surface, faint traces of grey slip on one side.

   Measurements: Height 12.57 mm; diameter 26.86 mm; diameter of the hole 6.33 mm.
   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 99.

5. *Āmalaka*-shaped bead (?): half broken, fluted body made by deep vertical incised lines, remains of a blind hole in place of a central perforation; not so well fired, black core, faint remains of a light red slip.

   Measurements: Height 31.07 mm; diameter 34.35 mm; diameter of the hole 14.98 mm.
   ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2, Sub-period IIB. Reg. No. 138.

Areca-nut-shaped beads (Fig. 45 and Pl. XLVII)

6. Areca-nut-shaped bead: smallest bead in the lot, convex sides with two groves below, mildly concave base with evidence of post-firing horizontal strokes and a central perforation; well fired, treated with dark grey slip.

   Measurements: Height 14.56 mm; diameter 18.92 mm; diameter of the hole 2.46 – 3.57 mm.
   ALB-3, Sq B1, Qds 1 and 2, Pit 2 sealed by Layer 3A, Sub-period IIA. Reg. No. 133.

7. Areca-nut-shaped bead: fine example, convex sides with a groove on the upper portion, flat base, with a central perforation; well fired, treated with a slip, dull red and smoky surface.

   Measurements: Height 17.5 mm; diameter 21.26 mm; diameter of the hole 3.29-4.66 mm.
   ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 71.

8. Areca-nut-shaped bead: truncated top, convex sides having mild carination, concave-cum-flattish base with a central perforation; well fired, treated with a black slip.

   Measurements: Height 16.81 mm; diameter 20.73 mm; diameter of the hole 3.09 – 3.87 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 1A, Sub-period IIB. Reg. No. 225.

9. Areca-nut-shaped bead (broken): low-height bead with convex sides, concave base with a central perforation; not so well fired, dull red core, treated with a dull red slip.

   Measurements: Height 12.44 mm; diameter 21.93 mm; diameter of the hole 3.65 – 3.93 mm.
   ALB-3, Sq YC1, Qd 2, Pit 2 sealed by Layer 3, Sub-period IIA. Reg. No. 18

10. Areca-nut-shaped bead: convex sides with grooves, concave base with a central perforation; well fired, dull red and smoky surface.

    Measurements: Height 18.07 mm; diameter 24.08 mm; diameter of the hole 3.09 – 4.26 mm.
    ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 227.

11. Areca-nut-shaped bead: truncated top, convex sides with the evidence of post-firing strokes, concave base having central perforation; well fired, treated with a black slip.

    Measurements: Height 18.26 mm; diameter 22.25 mm; diameter of the hole 2.88 - 4.16 mm.
    ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2, Sub-period IIB. Reg. No. 162.

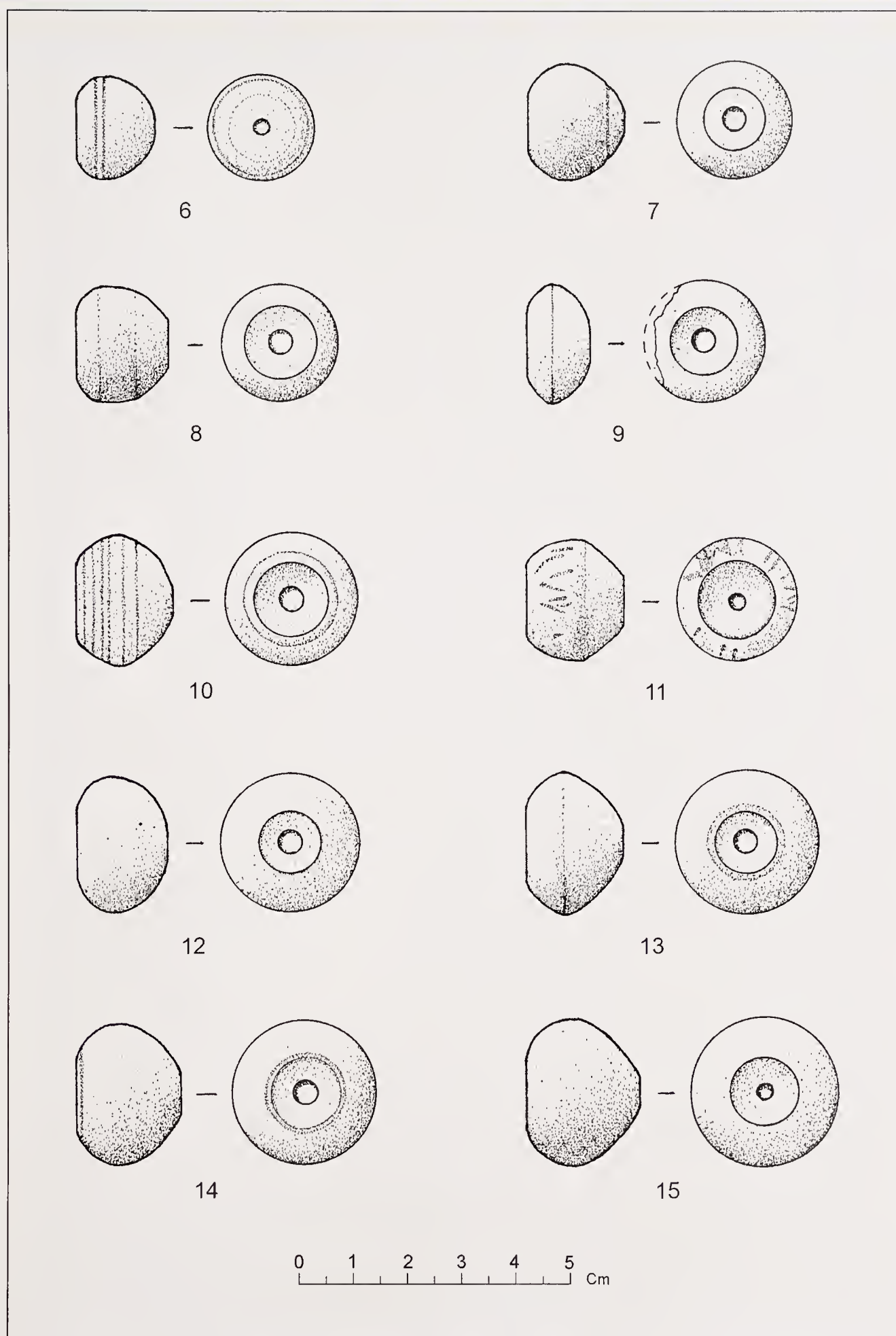
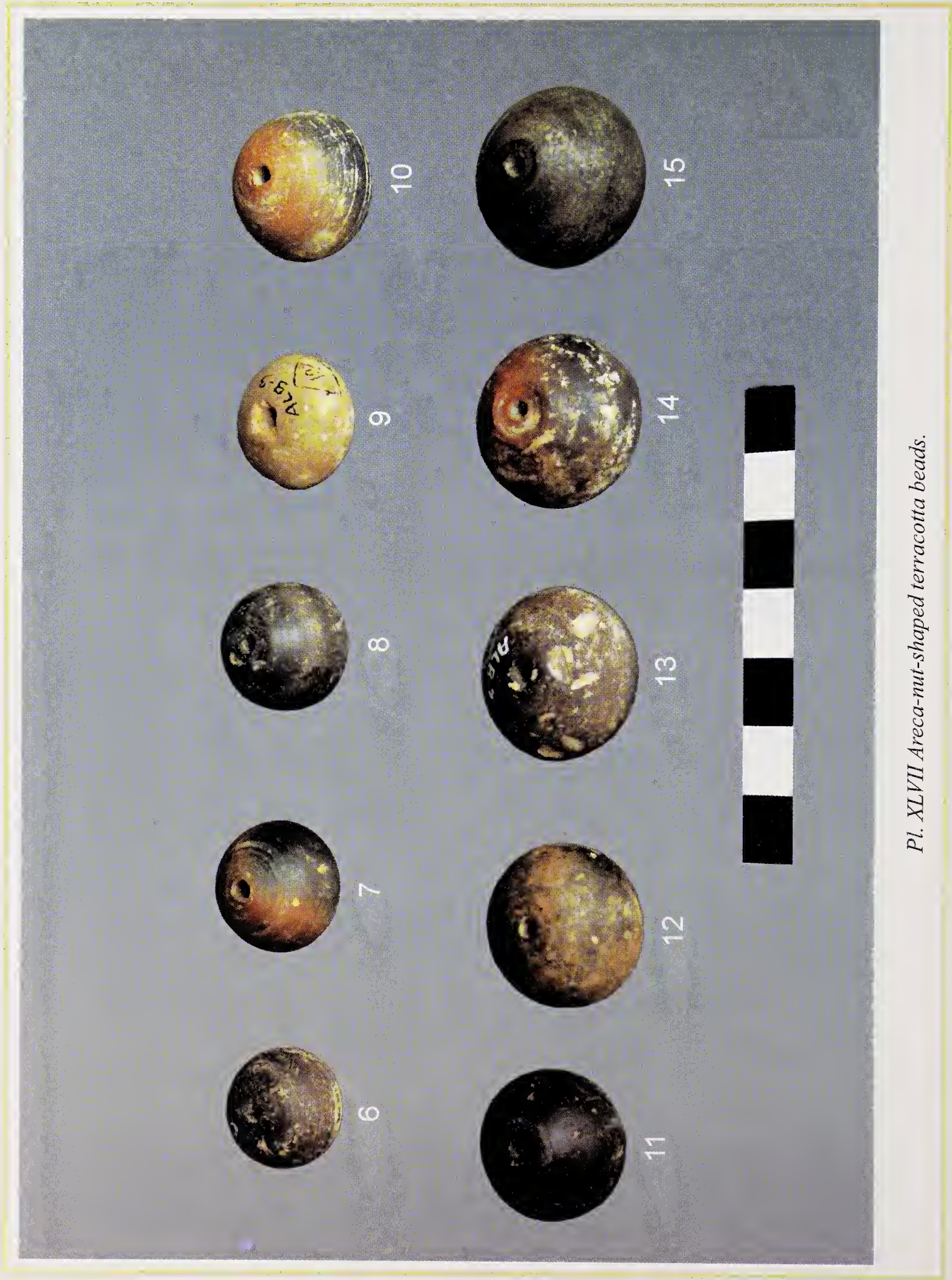



Fig. 45 Areca-nut-shaped terracotta beads.

Pl. XLVII Areca-nut-shaped terracotta beads.

12. Areca-nut-shaped bead: convex sides, small concave base with a central perforation; well fired, treated with a dull red slip.

    Measurements: Height 17.26 mm; diameter 24.79 mm; diameter of the hole 3.05 – 3.96 mm.
    ALB-3, Sq ZB1, Qd 4, Layer 1A, Sub-period IIB. Reg. No. 63.

13. Areca-nut-shaped bead: convex sides having a carination, concave base with a central perforation; well fired, treated with a black slip.

    Measurements: Height 17.94 mm; diameter 26.40 mm; diameter of the hole 3.08 – 3.96 mm.
    ALB-3, Sq B1, Qds 3 and 4, Pit 2 sealed by Layer 1A, Sub-period IIB. Reg. No. 170.

14. Areca-nut-shaped bead: truncated top, convex sides, concave base with a central perforation; well fired, smoky red surface.

    Measurements: Height 18.89 mm; diameter 26.12 mm; diameter of the hole 2.72 - 3.74 mm.
    ALB-3, Sq B1, Qds 3 and 4, Layer 1A, Sub-period IIB. Reg. No. 171.

15. Areca-nut-shaped bead: truncated top, convex sides, small concave base with a central perforation; well fired, treated with a blackish-grey slip.

    Measurements: Height 21.11 mm; diameter 26.64 mm; diameter of the hole 3.00 – 3.56 mm.
    ALB-3, Sq ZB1, Qd 1, Layer 2, Sub-period IIB. Reg. No. 177.

(ii) BANGLES

Introduction

The bangles are of two kinds of material viz. terracotta and shell. All these come from Period II.

The descriptions of the specimens are given below.

Shell Bangles

Fig. 46 and Pl. XLVIII

1. Bangle: fragmentary, wide groove along the middle portion on the exterior, uneven interior; dull white surface.

   Measurements: Diameter 64 mm; thickness 11.80 mm; breadth 20.89 mm.
   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 215.

2. Bangle: fragmentary, somewhat plain exterior and almost plain interior; white surface.

   Measurements: Diameter 50 mm; thickness 6.33 mm; breadth 7.15 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 1, Sub-period IIB. Reg. No. 144.

3. Bangle: fragmentary, smooth and plain exterior and uneven interior; dull white surface.

   Measurements: Diameter 60 mm; thickness 13.51 mm; breadth 9.65 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 229.

Terracotta Bangles

Fig. 47 and Pl. XLIX

1. Bangle: fragmentary, wide groove along the middle portion on the exterior, plain interior; made of well levigated clay, well fired, red core, treated with a fine red slip.

   Measurements: Diameter 66 mm; thickness 6.89 mm; breadth 18.21 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 3, Sub-period IIA. Reg. No. 180.

2. Bangle: fragmentary, wide groove along the middle portion on the exterior, plain interior; made of well levigated clay, well fired, dull red core, treated with a light red slip.

   Measurements: Diameter 64 mm; thickness 6.05 mm; breadth 18.44 mm.
   ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 119.

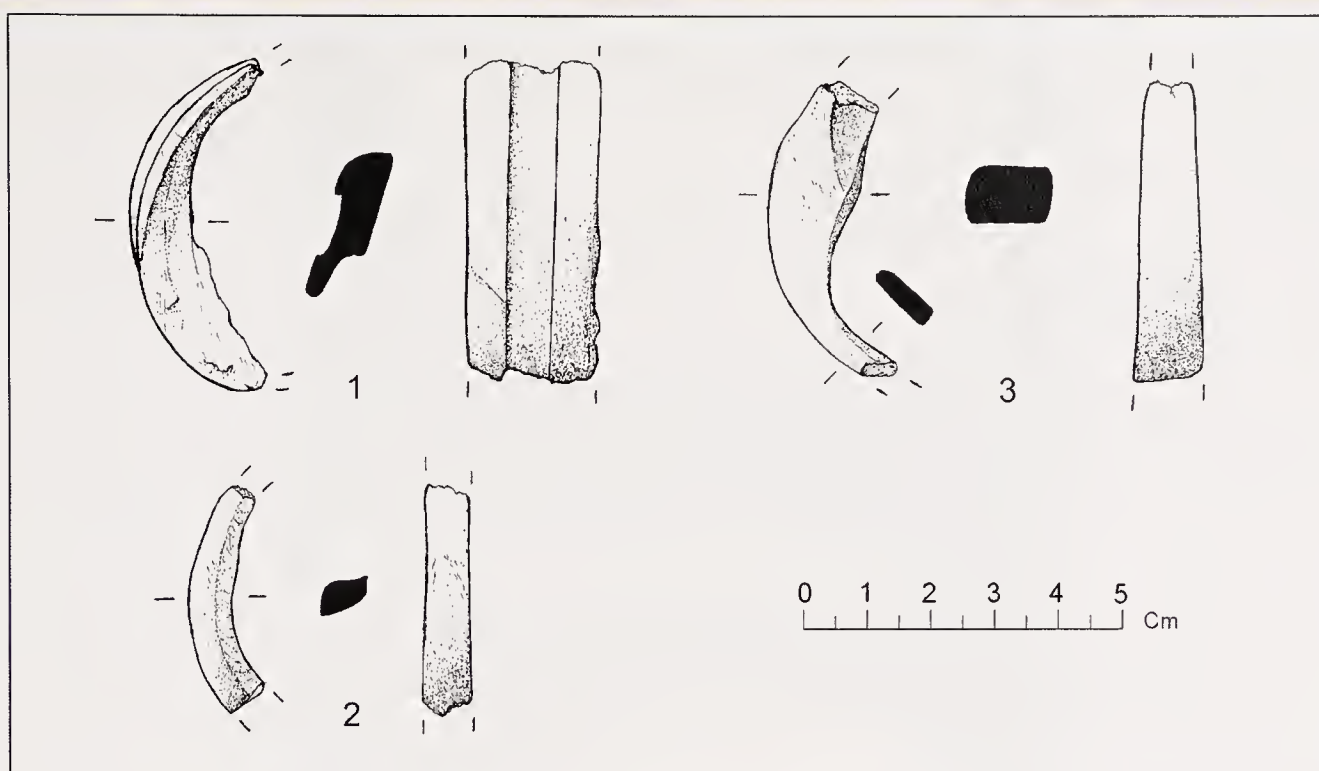



Fig. 46 Shell bangles.

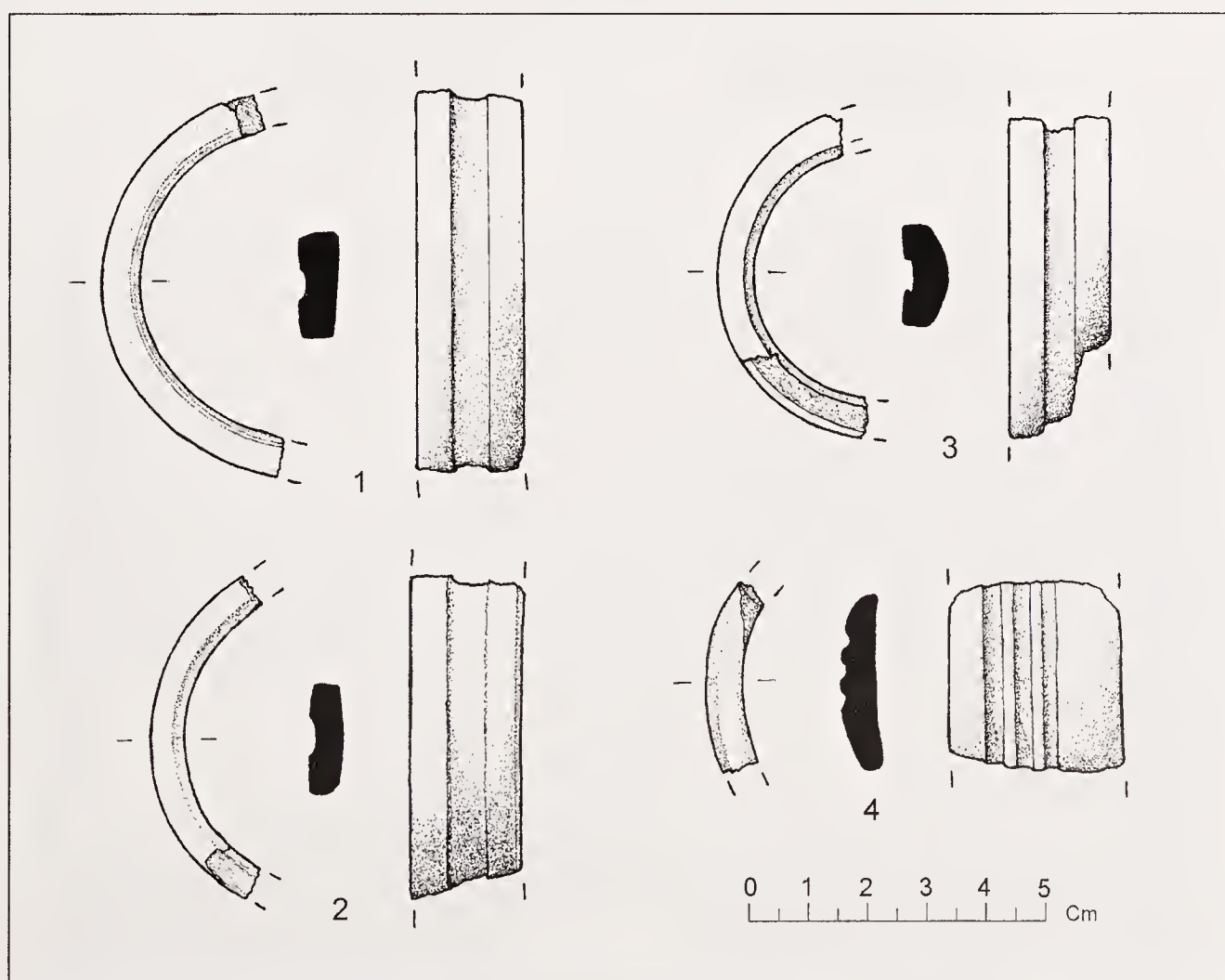
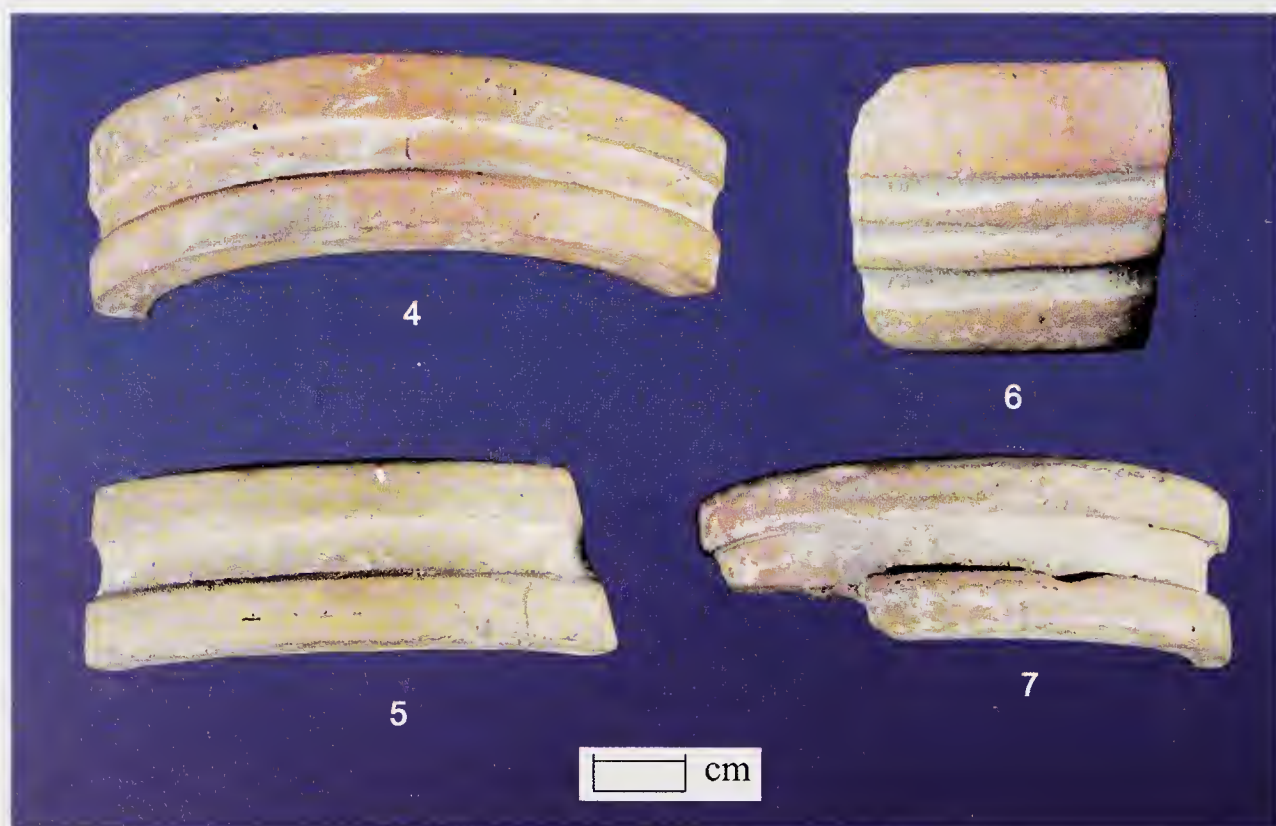



Fig. 47 Terracotta bangles.

Pl. XLVIII Shell bangles.

Pl. XLIX Terracotta bangles.

3. Bangle: fragmentary, deep and wide groove along the middle portion on the exterior, plain interior; made of well levigated clay, well fired, red core, treated with a light red slip.

   Measurements: Diameter 58 mm; thickness 6.89 mm; breadth 17.23 mm.
   ALB-3, Sq B1, Qds 1 and 2, Pit 4 sealed by Layer 2. Sub- period IIB. Reg. No. 103.

4. Bangle: fragmentary, multi-grooved exterior, plain interior; made of well levigated clay, well fired, red core, treated with a light red slip.

   Measurements: Diameter 60 mm; thickness 7.19 mm; breadth 29.17 mm.
   ALB-3, Sq A2, Qd 4, Layer 2, Sub-period IIA. Reg. No. 42.

(iii) STONE OBJECTS

Introduction

Plate L illustrates four specimens, made of three different kinds of stones, viz. white spotted red sandstone, medium grained buff sandstone and spotted soapstone. The first of these specimens is not properly identifiable, while Nos. 2 and 3 are fragmentary pestles. The soapstone specimen No. 4 seems to be a fragment of a casket. All of the four objects belong to Period II. All the specimens are individually described below.

Pl. L

1. Fragment of an object of white-spotted red sandstone, having roughly rectangular section, flat surface on a shorter side and concave profile on two longer sides. Also there are grooves on three of the sides.

   Measurements: Available length 57.37 mm; breadth 52.26 mm; thickness 28.09 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 2, Sub-period IIB. Reg. No. 221.

2. Fragment of a pestle of medium-grained buff sandstone, having roughly rectangular section with round corners, a convex top and a flat and rough bottom for grinding.

Pl. L Stone objects: 1, unidentified; 2 and 3, pestles; and 4, fragment of a pot.

Measurements: Available length 81.20 mm; breadth 59.25 mm; thickness 51.18 mm.
ALB-3, Sq ZB1, Qd 4, Layer 3, Sub-period IIA. Reg. No. 187.

3. Fragment of a pestle of medium-grained sandstone having a triangular section with round corners and a roughly convex bottom for grinding.

   Measurements: Available length 78.79 mm; breadth 52.60 mm; thickness 40 mm.
   ALB-3, Sq ZB1, Qd 1, Layer 1A, Sub-period IIB. Reg. No. 173.

4. Fragment of a pot (casket?) of soapstone, having a discular base (Fig. 48).

   Measurements: Height 10 mm; diameter of the base 25 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 1A, Sub-period IIB. Reg. No. 232.

(iv) ARCHITECTURAL MATERIAL

Introduction

Amongst the architectural material mention may be made of: a reed-impressed clay fragment from period I; kiln-fired bricks, plain as well as decorated; terracotta roof-tiles; and a terracotta door-socket, all from Period II. The reed-impressed clay fragment has already been discussed earlier, as an indirect evidence of temporary structures like huts, belonging to Period I (pp 13 & 21 and Pl. VII). Kiln-fired bricks were freely used for making walls during Period II, with the occasional use of decorated bricks for beautification of the structures. Terracotta tiles were evidently used for the roofs. Terracotta door-sockets were used for holding the tenon of door-leaves.

Descriptions of selected items are given below.

Decorated Bricks
Pl. LI

1. Decorated brick: fragmentary, probably used for making a pilaster. While its two sides are damaged, the remaining two sides depict deeply carved floral designs; fairly well fired, treated with a red slip.

   Measurements: Available length 145 mm; breadth115 mm; height 115 mm.

   ALB-3, Unstratified. Reg. No. 31.

Pl. LII

2. Decorated brick: square on plan; while two faces are plain, the remaining two are decorated with floral designs. The upper surface is also partly decorated; well fired, remains of a red slip.

   Measurements: Available length 233 mm; breadth 225 mm; height 75 mm.
   ALB-3, Sq ZB1, Qd 1, Layer 2, Sub-period IIB. Reg. No. 233.

Pl. LIII

3. Decorated brick: fragmentary, with two sides damaged. Of the remaining two sides, one is plain, while the other bears deeply carved geometric designs, separated by obliquely running lines. This design runs on to a part of the upper surface as well; well fired, treated with a red slip.

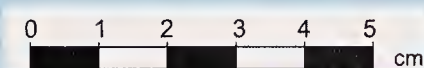
   Measurements: Available length 210 mm; breadth152 mm; height 75 mm.
   ALB-3, Unstratified. Reg. No. 30.

4. Decorated brick: square-shaped brick bearing three curved and deep, pre-firing finger-lines. At the starting points may be seen deep depressions left by the tips of the fingers; fairly well fired.

   Measurements: Length 222 mm; breadth 222 mm; height 90 mm.
   ALB-3, Unstratified. Reg. No. 32.

Terracotta door-socket
Pl. LIV (1, a and b)

1. Door-socket: broken in two pieces, circular in shape having concave base, convex top and a central perforation probably for inserting tanged part of the door; well fired.

   Measurements: Diameter 150-165 mm; height 65 mm; maximum diameter of the hole 40 mm.
   ALB-3, Unstratified. Reg. No. 231.

Pl. LI Two views of a decorated brick

Pl. LII Two views of another decorated brick

Pl. LIII Two other decorated bricks

Tiles

Pl. LIV (2, 3 and 4)

2. Fragment of a roof tile having flat base, with one side slightly raised at right angle; handmade, well fired, red core, devoid of slip.

   Measurements: Available length 125 mm; breadth 75 mm.
   ALB-1, Sq II - IV, Layer 1A, Sub-period IIB. Reg. No. 234.

3. Fragment of a roof tile having a flat base, with one side slightly raised and curved; handmade, well fired, dull red core, devoid of slip.

   Measurements: Available length 95 mm; breadth 55 mm.
   ALB-1, Sq II - IV, Layer 1A, Sub-period IIB. Reg. No. 236.

4. Fragment of a roof tile with a flat body and flat edge; handmade, well fired, red core, devoid of slip.

   Measurements: Available length 66 mm; breadth 54 mm.
   ALB-3, Unstratified. Reg. No. 235.

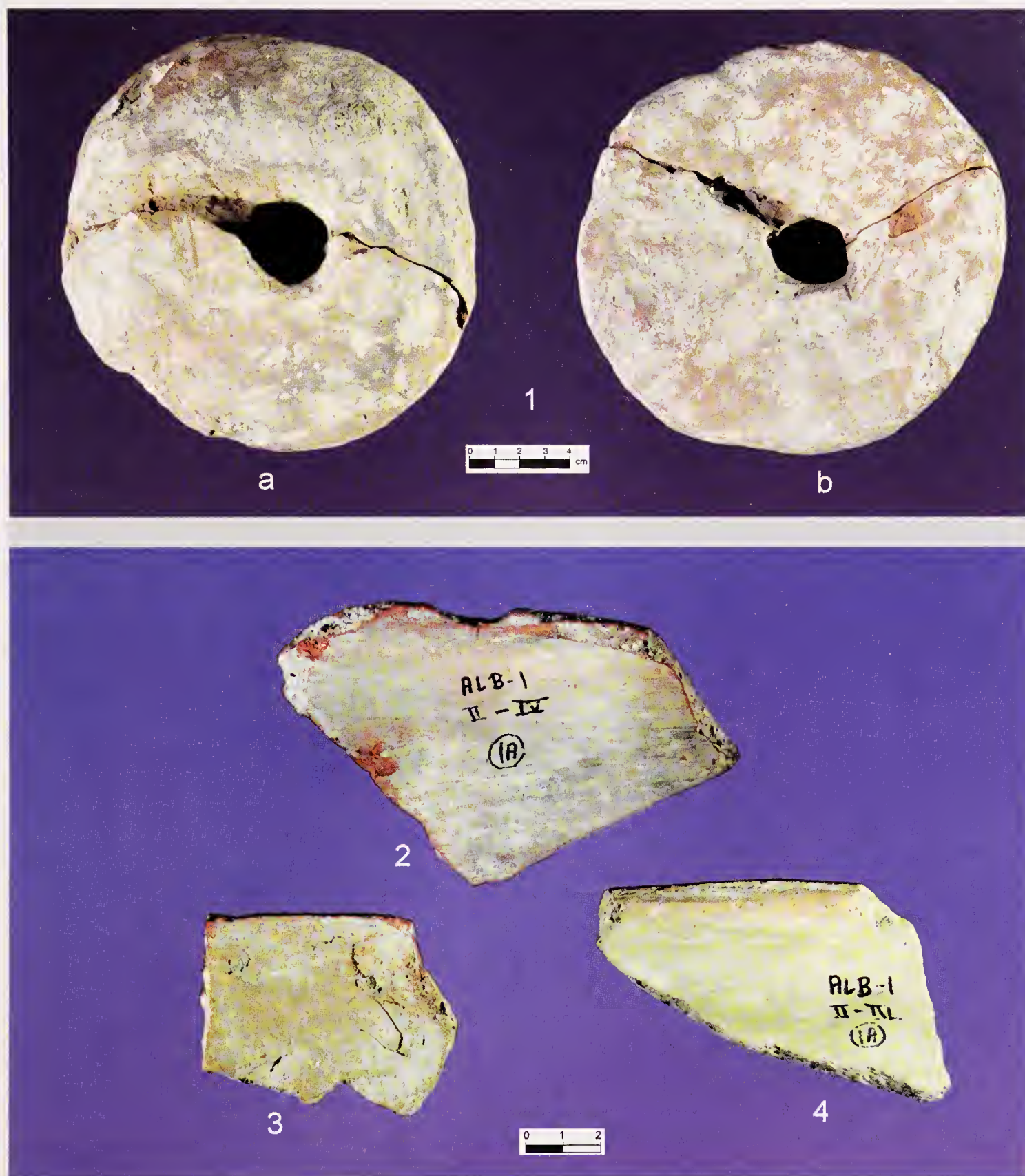
(v) MISCELLANEOUS OBJECTS

Introduction

In this category, the selected examples include various kinds of terracotta objects and a bone object. The terracotta objects comprise a handle of a rattle, discular objects, part of a mould, hopscotches, cylindrical objects, fragment of a decorated disc, sling balls, stopper, finial, etc. Of bone, the object is a fragmentary point. Out of these, the hopscotches belong to Period I and the rest to Period II.

(A) Terracotta Objects

Pl. LV

1. Fragment of the handle of a rattle, having a cylindrical shaft and a seven-petalled top; well fired, treated with a red slip. (a, shows the side view and b, the top).

Pl. LIV 1 a and b, terracotta door-socket; and 2-4, fragment of roof tiles.

Measurements: Remaining height 43.11 mm; diameter of the stem 16 mm; diameter of the flower 31.80 mm.

ALB-3, Sq ZB1, Qd. 4, Layer 2, Sub-period IIB. Reg. No. 95.

2. Fragment of a circular object with one side convex and the other concave. There is a central knob with evidence of a perforation; handmade, well fired.

   Measurements: Height 12.87 mm; diameter 60 mm; thickness 11.78 mm.

   ALB-3, Sq B1, Qds 1 and 2, Layer 3A, Sub-period IIA. Reg. No. 54.

3. Small-sized terracotta disc: roughly circular on plan, with one side convex and the other concave. It has five blind pin-holes; handmade, moderately fired, faint remains of a light red slip.

   Measurements: Maximum diameter 18.2 mm; thickness 7.84 mm.

   ALB-3, Sq ZB1, Qd 4, Layer 3A, Sub-period IIA. Reg. No. 117.

Pl. LVI

1. (1a, mould and 1b, impression) Fragment of a terracotta mould: part of a squarish or rectangular mould with flat back and an unidentifiable negative design on the other side; well fired.

   Measurements: Available length 74.08 mm; available breadth 61.08 mm; thickness 27.36 mm.

   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 52.

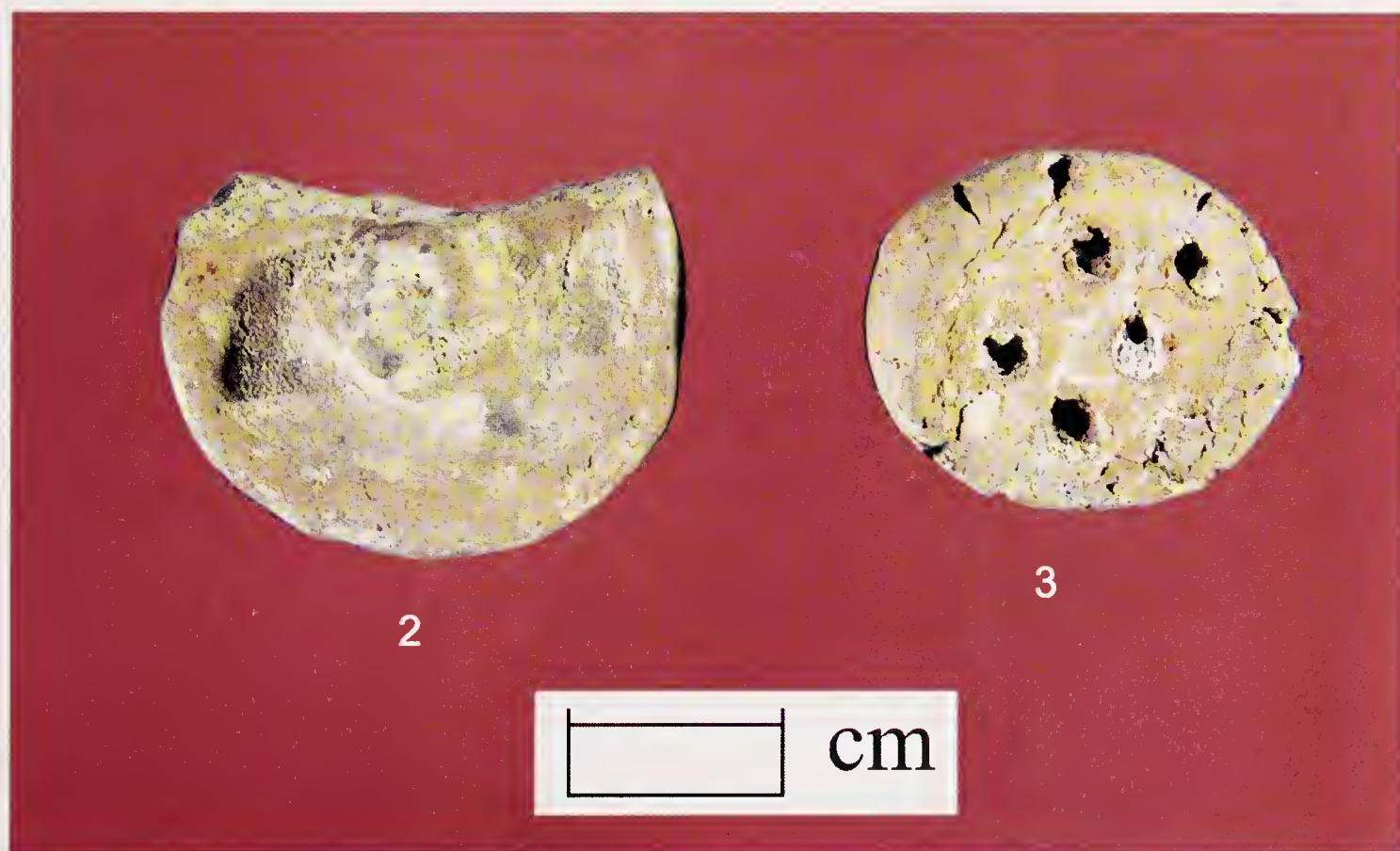
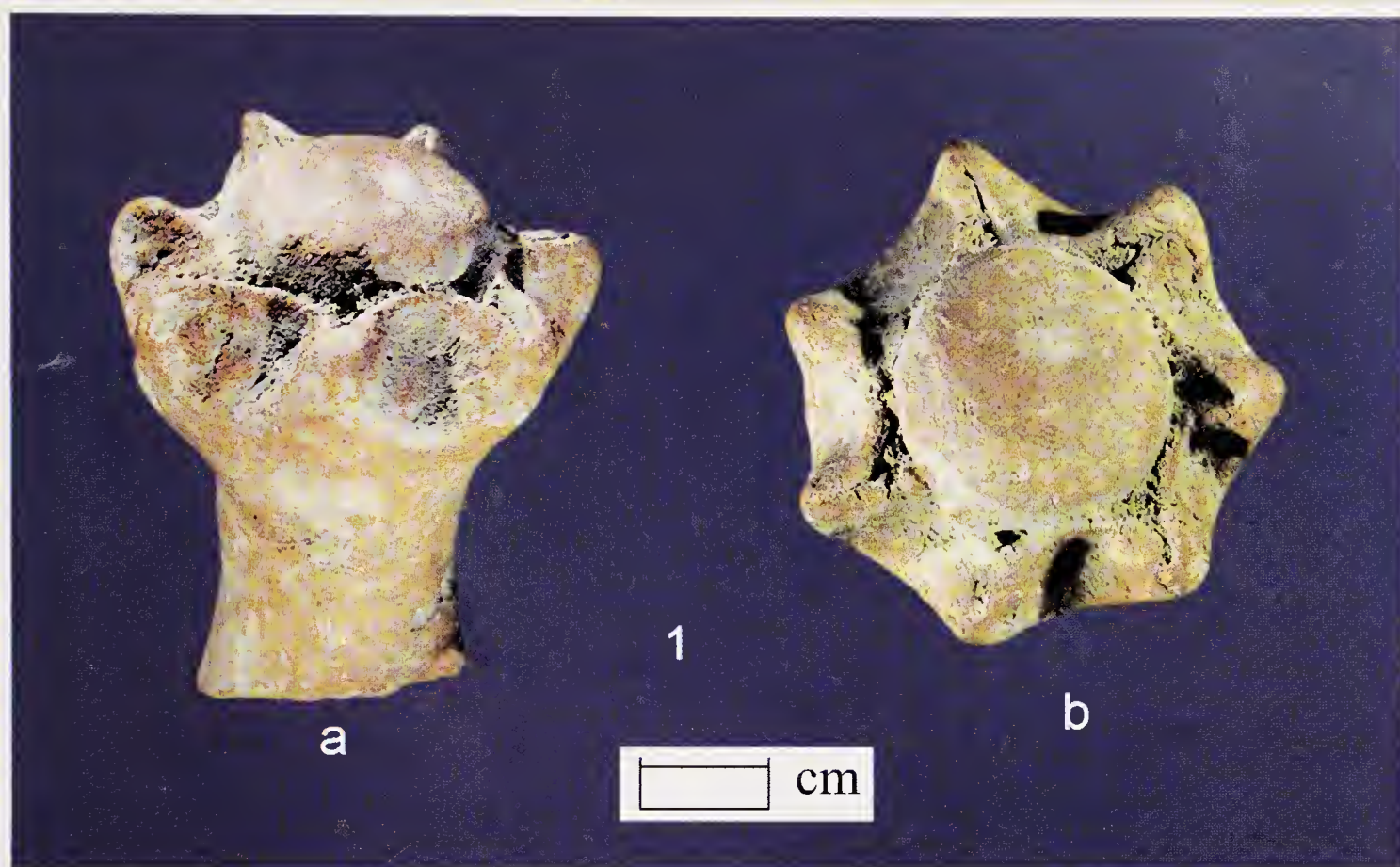
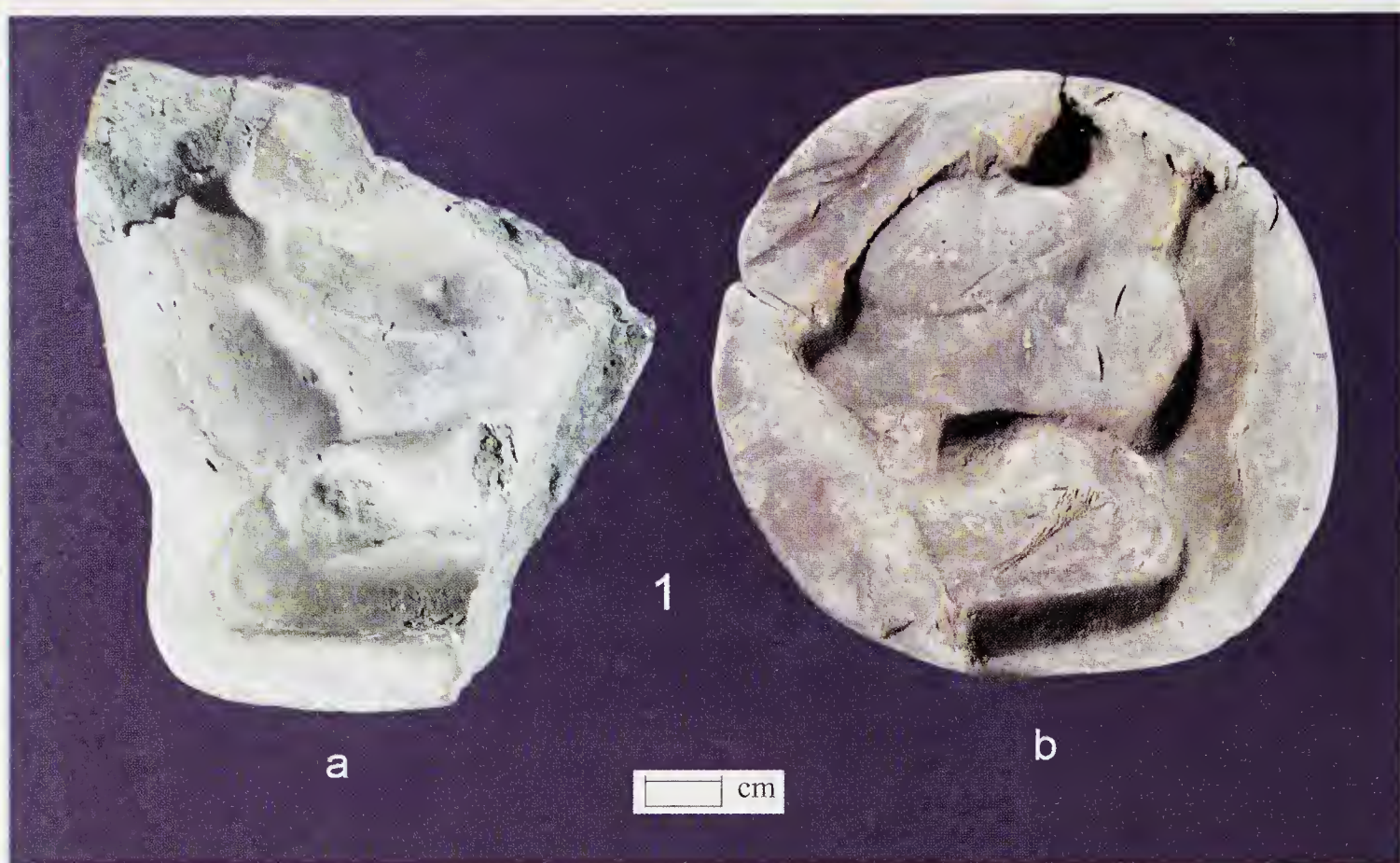
2. Hopscotch: roughly circular pottery-disc.

   Measurements: Maximum diameter 40 mm; thickness 6.20 mm.

   ALB-3, Sq B1, Qds 1 and 2, Layer 4A, Period I. Reg. No. 110.

3. Hopscotch: semi-circular fragment of a pottery-disc.

   Measurements: Diameter 70 mm; thickness 9.17 mm.

   ALB-3, Sq B1, Qds 1 and 2, Layer 4, Period I. Reg. No. 56.

Pl. LV Miscellaneous terracotta objects: 1, rattle; 2 and 3, discular objects.

Pl. LVI Miscellaneous terracotta objects: 1, mould; and 2 - 5, hopscotches.

4. Hopscotch: roughly circular pottery-disc.

   Measurements: Diameter 54 mm; thickness 70 mm.
   ALB-3, Sq A2, Qd 1, Layer 4, Period I. Reg. No. 237.

5. Hopscotch: partly broken; roughly circular pottery-disc.

   Measurements: Diameter 50.43 mm; thickness 11.79 mm.
   ALB-3, Sq B1, Qds 1 and 2, Layer 4, Period I. Reg. No. 104.

Pl. LVII

1. Cylindrical object of terracotta, having two incised bands each at the upper and lower ends, and some unidentifiable designs in relief on the surface; not so well fired, blackish core, dull red in colour.

   Measurements: Length 34.24 mm; breadth 16.75 mm.
   ALB-3, Sq B1, Qds. 1 and 2, Layer 2, Sub-period IIB. Reg. No. 84.

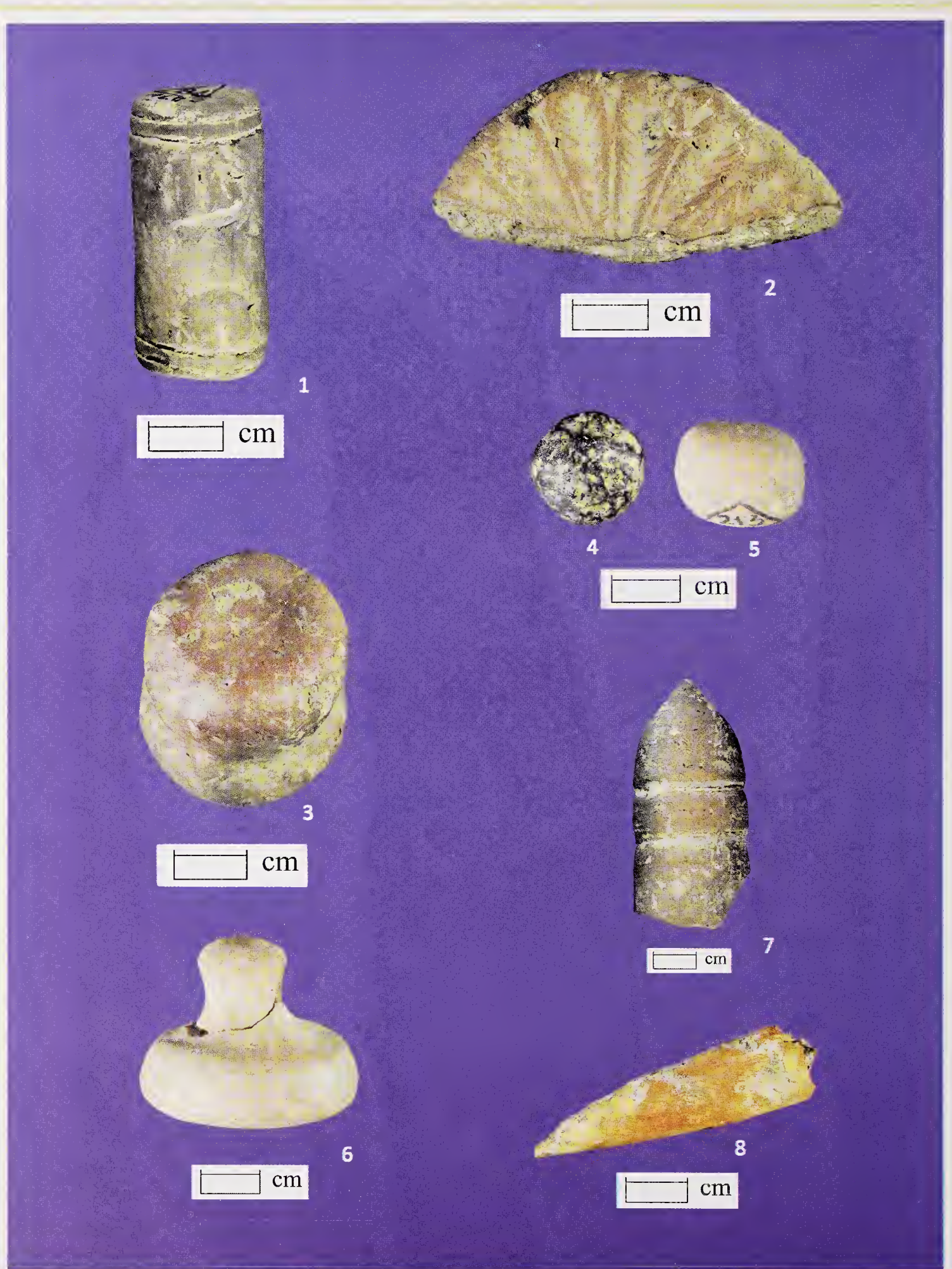
2. Decorated disc: broken, circular on plan, decorated on one side with a stamped flowers(?) design; not so well fired, dull red core, devoid of slip.

   Measurements: Approximate diameter 52 mm; thickness 8.48 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 1A, Sub-period IIB. Reg. No. 151.

3. Gamesman (?): cylindrical-cum-concave profile, slightly concave top; handmade, well fired, treated with a light red slip.

   Measurements: Diameter 26.65 mm; height 25.71 mm.
   ALB-3, Sq B1, Qds. 3 and 4, Layer 3, Sub-period IIA. Reg. No. 174.

4. Ball: spherical with uneven surface; handmade, well fired, greyish black surface, devoid of slip.

   Measurements: Diameter 15.14 mm.
   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 212.

Pl. LVII Miscellaneous objects: 1 - 7, terracotta; and 8 bone.

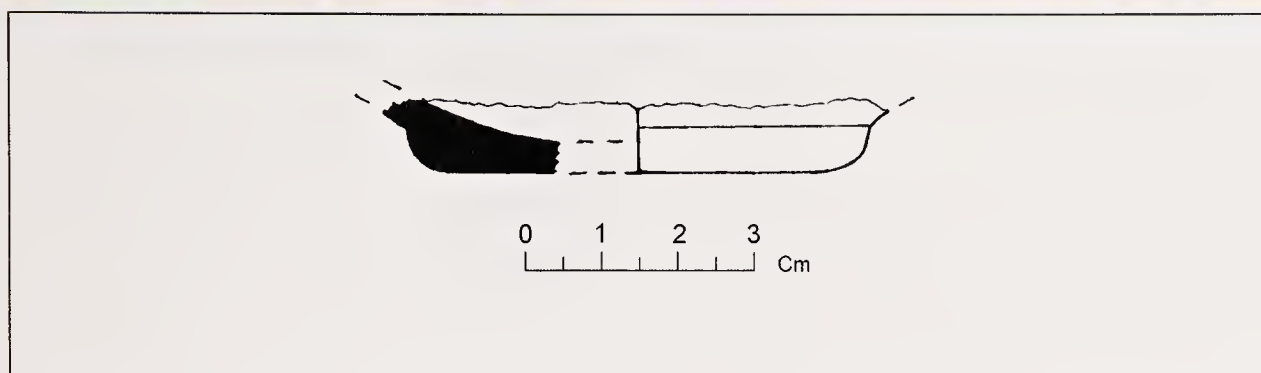



Fig. 48 Fragment of a soapstone pot.

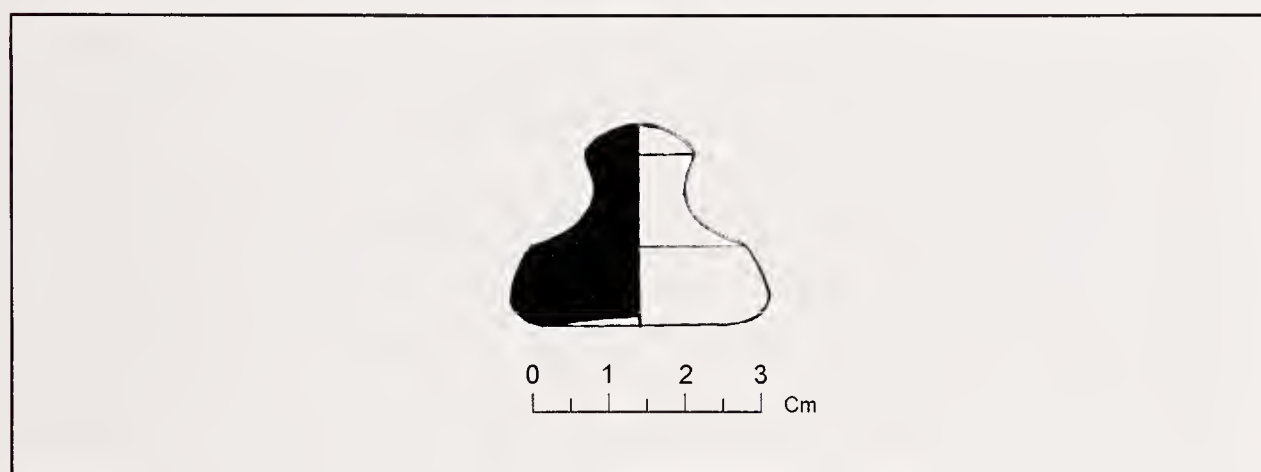



Fig. 49 Terracotta gamesman/stopper.

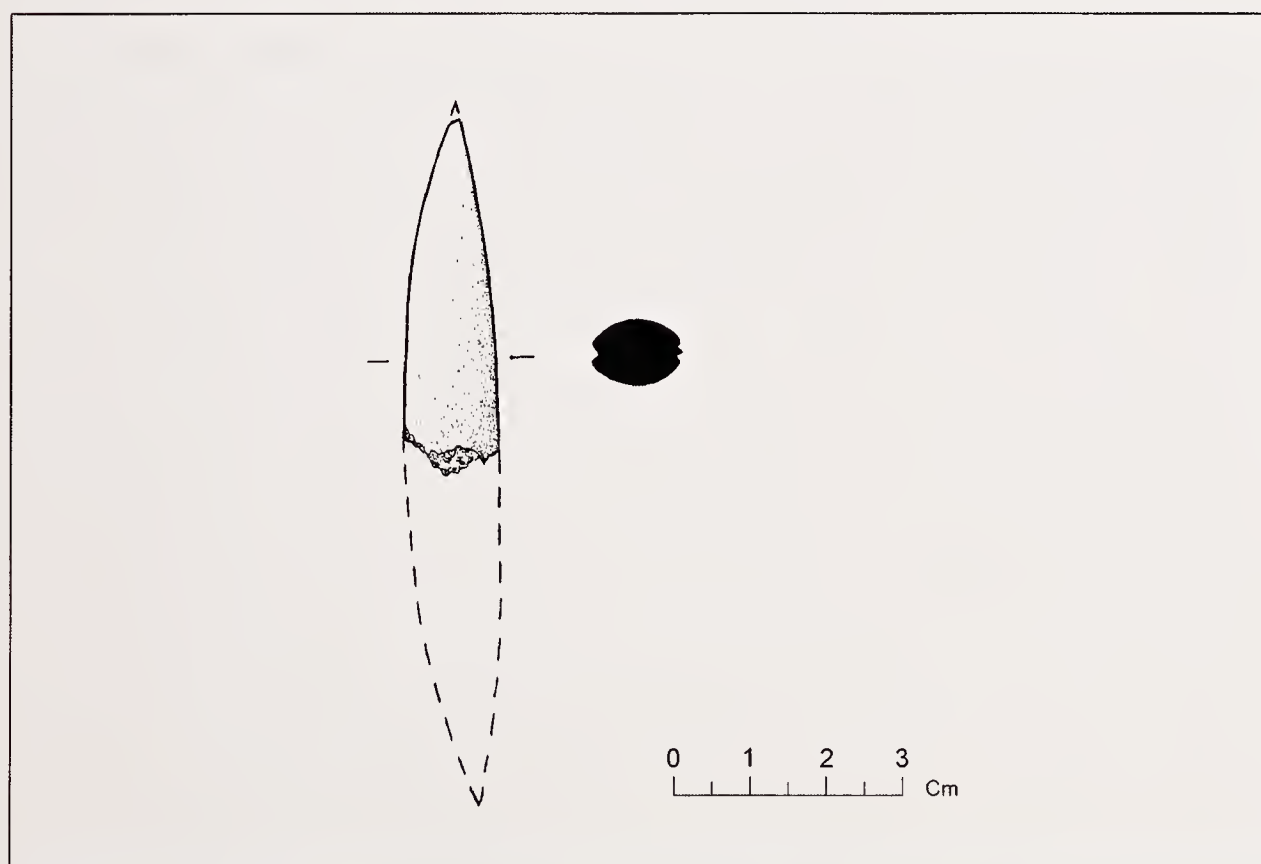



Fig. 50 Bone point.

5. Ball: roughly spherical; handmade, moderately fired, dull red and smoky surface, devoid of slip.

   Measurements: Diameter 15.76 to 17.63 mm.
   ALB-3, Sq B1, Qds 1 and 2, Layer 3, Sub-period IIA. Reg. No. 213.

6. Gamesman or stopper ?: centrally placed knob with a flat-cum-concave discular base; medium fabric; well fired, dull red in colour, devoid of slip (Fig. 49).

   Measurements: Diameter 33.99 mm; height 25.81 mm.
   ALB-3, Sq YC2, Qd 2, Layer 3, Sub-period IIA. Reg. No. 27.

7. Finial: fragmentary, hollow cylindrical grooved body having domical top with a pointed tip; not so well fired, smoky red surface, devoid of slip.

   Measurements: Diameter 24.53 mm; height 51.51 mm.
   ALB-3, Sq B1, Qds 3 and 4, Layer 2, Sub-period IIB. Reg. No. 179.

(B) Bone Object

8. Bone point: fragmentary, bio-convex in section, pointed tip (Fig. 50).

   Measurements: Available length 44.68 mm; breadth 12.35 mm; thickness 8.55 mm.
   ALB-3, Sq B1, Qds 1 and 2, Layer 1A, Sub-period IIB. Reg. No. 73.

An Analysis Of The Data

Chapter X

Excavations at the five sites mentioned in the Chapter I, namely Ayodhyā, Śṛiṅgaverapura, etc., show that all these were characterized by the same kind of cultural equipment in their lower levels and were in existence around the beginning of the first millennium BCE. In this context, however, the evidence yielded by Bharadvāja Āśrama is of utmost significance in ascertaining the historicity of the *Rāmāyaṇa*, as would be seen from the following discussion.

Let it be assumed, for the sake of argument, that the *Rāmāyaṇa* story was the figment of imagination of a poet called Vālmīki. It is accepted by scholars that the *Rāmāyaṇa* of Vālmīki was reduced to writing sometime between the third century BCE and third century CE. During this time-bracket, whereas the other sites associated with the Rāmāyaṇa story were 'living entities' (i.e. under occupation), as demonstrated by the excavations, Bharadvāja Āśrama was not. A question that now needs to be asked is: How come that this last-named site was also included in the narrative of Vālmīki when it was not a 'living entity'? The only possible way in which the inclusion of Bharadvāja Āśrama in the *Vālmīki Rāmāyaṇa* can be explained is that there must have already existed, perhaps in the form of a ballad, a core story in which this site also featured and it was this prevalent story that was reduced to writing in the third-second century BCE.

In this context, one may recall three very significant pieces of evidence from Bharadvāja Āśrama which call for a proper analysis and understanding. First of all, it is the topography of the site. As already stated in Chapter II, it consists of a flat piece of land, there being no evidence of any mound the like of which we have, for example, at Ayodhyā or Śṛiṅgaverapura.

But right adjacent to it the ground-level drops by 5-6 meters and the slope continues as one moves on towards the Gaṅgā. Local people tell us that not long ago the flood-waters of the Gaṅgā, when it was in spate during the rainy season, used to come up far inside. A bund has since been constructed which prevents the water from coming up now. In other words, all this indicates that in ancient times the Gaṅgā used to flow past Bharadvāja Āśrama.

Secondly, as mentioned in Chapter III, the lower levels of Bharadvāja Āśrama did not yield any brick structures as did the upper levels. Nevertheless, sherds of the Northern Black Polished Ware did occur, but only sporadically, in the thick sandy loam that lay underneath. In this sandy deposit lumps of clay bearing impressions of reed, were also met with, which indicates that there were only wattle-and-daub huts in the area. This scenario fits well into the picture of an *āśrama* (hermitage) by the side of the Gaṅgā. Surely, archaeology cannot tell us that it was the *āśrama* of sage Bharadvāja, since we have not come across any inscription from the site certifying the same. For all we know, writing was not in vogue at that time. The earliest inscriptions that we have as of now are datable to the fourth-third century BCE.

The third point of interest is that, the site was re-occupied only during the Gupta times. It is well known that it was during the Gupta period that there took place a great revival of the Brahmanical religion. Since oral tradition, perhaps through ballads, must have carried down the centuries the memory of the association of this site with the Rāma story, it was but natural for the people to revive its glory by re-occupying it.

In this entire context, it becomes necessary to emphasize the role of oral tradition in preserving and carrying down facts of 'history'. And I cite here an example from the mid-twentieth century.

It was the winter of 1954. I was travelling by the Kalka Mail from Calcutta (now spelt Kolkata) to Delhi on an official tour. (At that time I was posted in Calcutta as the Superintending Archaeologist of the Eastern Circle of the Survey.) It was early morning as the train steamed into Allahabad railway station, piercing the dense fog. I opened the door of my compartment just to look out for a cup of hot tea. There was no tea-wallah. Instead, there was total anarchy on the platform. Thousands - yes thousands - of people, wrapping

themselves with blankets or thin quilts were rushing up and down just to get into the train. And my compartment was no exception. More than thirty people, with or even without ticket, barged into it. Instead of warming myself with a hot cup of tea, I had for free the heat from the overcrowding in the compartment. I was completely taken aghast, for I had never before witnessed such a scenario. Most of these passengers were crying and some of them even actually weeping. I could not make out the head or tail of what was actually happening. However, as the train steamed off and passed by successive stations, the people got down and in a few hours I could regain my berth. But still there was no clue about what had really transpired at Allahabad and why these people were crying and weeping.

The train reached Delhi around 8 p.m. and I entered my home a little before 9 p.m. I immediately opened my TV set for the usual evening news and learnt to my great dismay that hundreds of people – men, women and children – had died in the stampede that had occurred in the early hours of the morning at the *Kumbha Melā* in Allahabad. (The *Kumbha Melā* is a great religious festival in which Hindus from various parts of the country come to Allahabad to have a holy dip at the *Saṅgama* (confluence of the Gaṅgā and Yamunā). Looking back, I realized what was happening and why, when my train entered the Allahabad railway station. The next morning the newspapers were full of reports about this great disaster, accompanied by all sorts of horrifying photographs.

What had really happened was that in the wee hours of the morning when thousands of pilgrims were walking towards the *Saṅgama* (the confluence) the elephants on which the *Nāgā Sādhūs* were seated ran amuck and killed a few pilgrims. This brought about a chain reaction. People began to run helter-skelter and in the stampede that followed hundreds of people perished. The police stepped in and took the injured to hospitals. The dead bodies were collected and later cremated. Meanwhile, some miscreants took the opportunity to harass the womenfolk and rob them of their ornaments!

Now comes the point why I have wasted so much of the reader's time by narrating this episode. The reason is that while the electronic and print media had both given full details of this tragic event, the local poetic genius did not lag behind. Three – not just one – different

versions of ballads sprang up in no time, incorporating this event: a Daraganj version, a Jhusi version and a Śṛiṅgaverapura version, the names being based on the localities around Allahabad to which the ballad-composers belonged. Each one of these versions gives the basic details of the event, but differs one from the other by adding a lot of spicy material of an individual kind.

When we were camping at Śṛiṅgaverapura we used to have every week-end evening a get-together with the workmen employed in the excavations. These evenings were devoted to re-creative activities including musical recitals. One evening one of the workman came up with an exciting recital of a ballad dealing with the tragic event referred to in the preceding paragraphs. He sang it, playing on *kharatāla*s (a kind of musical instrument) in his hands. It was so exciting a performance that we immediately tape-recorded it. I take the opportunity of reproducing the text in Appendix. These ballads preserve and transmit from generation to generation some noteworthy events which people are otherwise likely to forget. I am not burdening the reader with a verbatim translation of the ballad, but giving only the essentials of it. The ballad is in two small parts which, put together, give the following information.

To begin with, the composer of the poem offers his obeisance to Goddess Sarasvatī and requests her to be on his right (i.e. to help him in his composition). He then praises the Gaṅgā. Thereafter he states that he is a resident of village Ram Chaura, located in Police Station Nawabganj, Tahsil Soraon, District Allahabad. There is a pipal tree in front of his house. In the neighbourhood there is the seat of goddess of Singraur (the local name for Śṛiṅgaverapura) where a festival is also held. Mother Gaṅgā has been imparting wisdom to the poet.

The narration then goes on to the actual happenings on the occasion of the bathing festival. It was the year 1954. There was a public announcement that the *melā* (public festival) was going to be a big affair. All sorts of arrangements were made in advance. Police and military personnel were posted on duty. Land-depressions were levelled up and bridges were constructed at several places. Cholera injections were given to the people. Many new trains were pressed into service. A little away from the bank of the Yamunā close to Arail,

a special strip was constructed for the aeroplanes to land. The *melā* covered localities like Jhusi, Badara, Daraganj, Alopi Bagh, Berahna, Arail, Keetganj, etc. A large number of tents were pitched. The locality was brimming with activity, the like of which was never witnessed before.

However, when the 3rd of February arrived – it was a Wednesday – people came in very large numbers for taking their bath. From one end the pilgrims pushed their way and from the opposite direction the *sādhūs* (mendicants) did the same. There was terrible confusion near the bund. As a result, lots of people died – men and women, the old and young. The blind, lame and beggars – none was spared; they made their way to *yama-loka* (the land of Death). Nobody cared to rescue the trodden ones, their bones were thoroughly smashed.

So many members of some families, including mothers carrying their children on the lap died within the twinkling of the eye. Government orders were soon issued. Military lorries arrived at the scene, picked up the dead and injured and took them to the police station. There were huge piles of dead bodies; likewise, of shoes, cloths and utensils (which the pilgrims had worn or carried with them) – as if in a shop! Photographs were taken of the dead bodies and the injured ones were sent to hospitals. Public announcements were also made about the missing ones.

At the end, the composer of the ballad gives his name as Ram Adhar.

From the foregoing, a very important lesson has to be learnt, namely that oral traditions, of which ballads constitute just one facet, cannot simply be brushed aside as mere figments of imagination. They may be having a good deal of extra padding, but do incorporate the basic truth. And this is what actually happened in the case of the Rāmāyaṇa story and the inclusion in it of Bharadvāja Āśrama.

A Report On Scientific Examination Of Metal Samples*

Chapter XI

Introduction

Three metal-samples, two of iron and one of copper, were received in the laboratory for their chemical characterization, the details being as follows:

Sl. No.	Reg. No.	Location	Layer	Metal/Object
1	100	ALB-3, B1, Qds 1 and 2, depth 90 cm	3	Iron Nail
2	67	ALB-3, ZB1, Qd 4, depth 52 cm	1A	Iron Slag
3	178	ALB-3, B1, Qds 1 and 2, depth 44-57 cm	2	Copper Piece

The metal samples were examined with an objective to characterize their physical state as well as their chemical composition. The following scientific studies were undertaken keeping these objectives in view:

(a) Photo documentation:

For recording naked eye observation of the physical details, etc.

(b) Microscopic examination under Zoom Stereomicroscope:

For capturing fine details of surface topography and also other important structural features such as depositions, cracks and voids, pits, etc., so as to facilitate inferring factors which have acted upon the samples.

(c) Metallographic studies. viz. cutting, mounting, etching and microscopic Examination:

The technique involves drawing samples in appropriate orientation and dimensions via cutting and preparing them through the stages of grinding, polishing and etching so that the micro structural details could be observed under the metallurgical microscope to infer their manufacturing process and other metallurgical features.

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* Studies conducted under the guidance of **Dr. K.S. Rana**, Director (Science), ASI
Report Prepared by **Ms. Shilpa Raturi**, Dy. Superintending Archl. Chemist
Sample Analyzed by **Shri Sunil Kapoor**, Asstt. Suptdg. Archl. Chemist; **Shri Madhusudan Uniyal**, Asstt. Suptdg. Archl. Chemist; and **Shri Pankaj Tiwari**, Asstt. Archl. Chemist
Metallographic Studies conducted by **The Directorate of Science Laboratory, Dehradun**
Instrumental Analysis studies conducted by **Wadia Institute of Himalayan Geology, Dehradun**

(d) Scanning Electron Microscopy with Energy Dispersive X Ray Examination.

Scanning electron microscopy coupled with Energy Dispersive X ray System provides an effective means of obtaining quantitative information of the distribution and composition of the metal sample.

(e) Mineralogical characterization employing X Ray Diffraction analysis.

The technique involves exposing the samples to the X ray beams of particular intensity at a fixed angular position to diffract them in specific directions which are characteristics of the sample mineralogy, thus helping in finding out the various mineral compounds present in the crystalline form within the sample.

(f) Trace element detection employing ICPMS instrumental analysis.

ICPMS is highly sensitive and capable of the determining the range of metals and several non-metals at concentrations below one part in 10^{12} (part per trillion). It is based on coupling together inductively coupled plasma as a method of producing ions (ionization) with a mass spectrometer as a method of separating and detecting the ions. ICPMS is also capable of monitoring isotopic speciation for the ions of choice.

- The analytical data was produced against calibration performed using certified international reference standard.
- Maximum permissible error is ~2.5% relative.

1. Scientific investigations of Iron Nail

(Sl. No. 1; Reg. No. 100)

(i) Physical observation

The Iron nail appears to have lost its original dimensions and shape due to extensive corrosion of the metal surface. The corrosion products having redeposited on the external surface unevenly, causing the loss of its original dimensions. The texture of metal surface is rough, pitted and reddish brown in colour. The metal core is not distinguishable, which is indicative of major loss of core metal (Pl. LVIII; Fig. 51).

Pl. LVIII Iron nail.

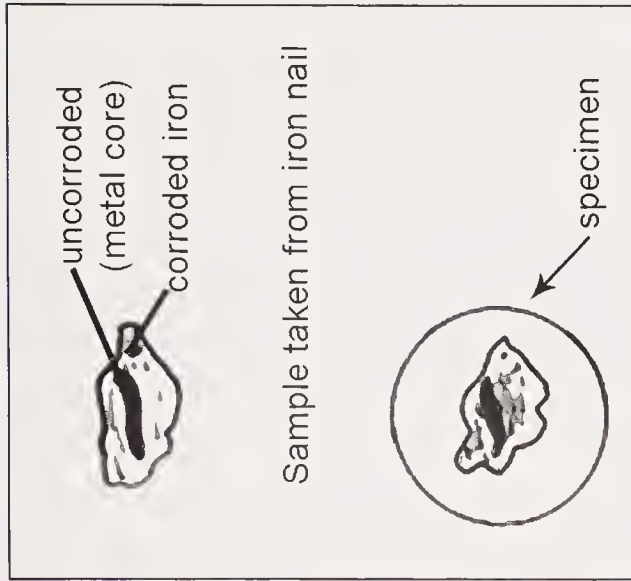
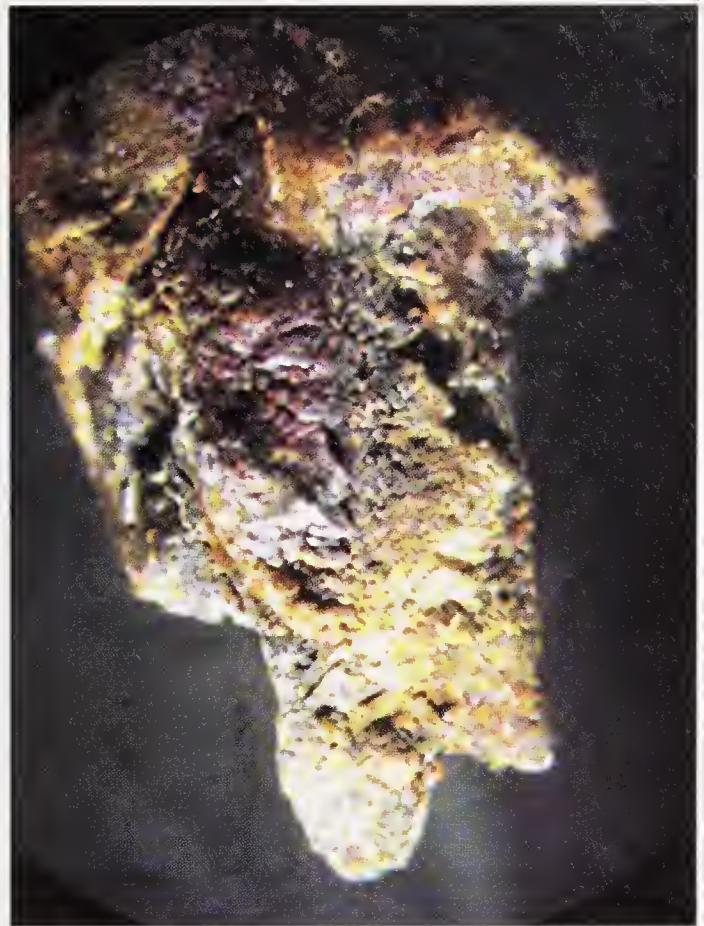



Fig. 51 Graphic representation of Iron nail.

Pl. LIX Iron nail two close-up views (Stereomicroscope): a, showing major cracks; and b, showing surface features.

(ii) Microscopic Studies

Upon microscopic examination, the nail reveals a reddish brown pitted surface with identification of marginal core surface areas. The depths of the pits vary in size all over the surface. A major crack running lengthwise through the nail is indicative of stress on it. The microscopic observation photograph is as follows (Pl. LIX, a and b)

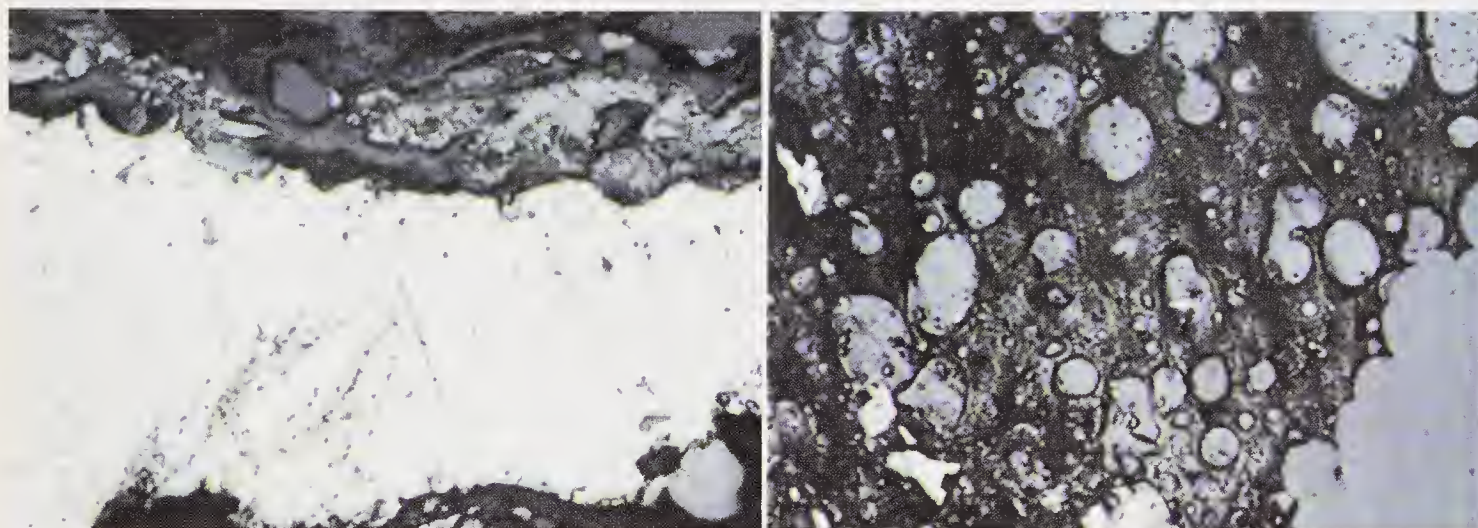
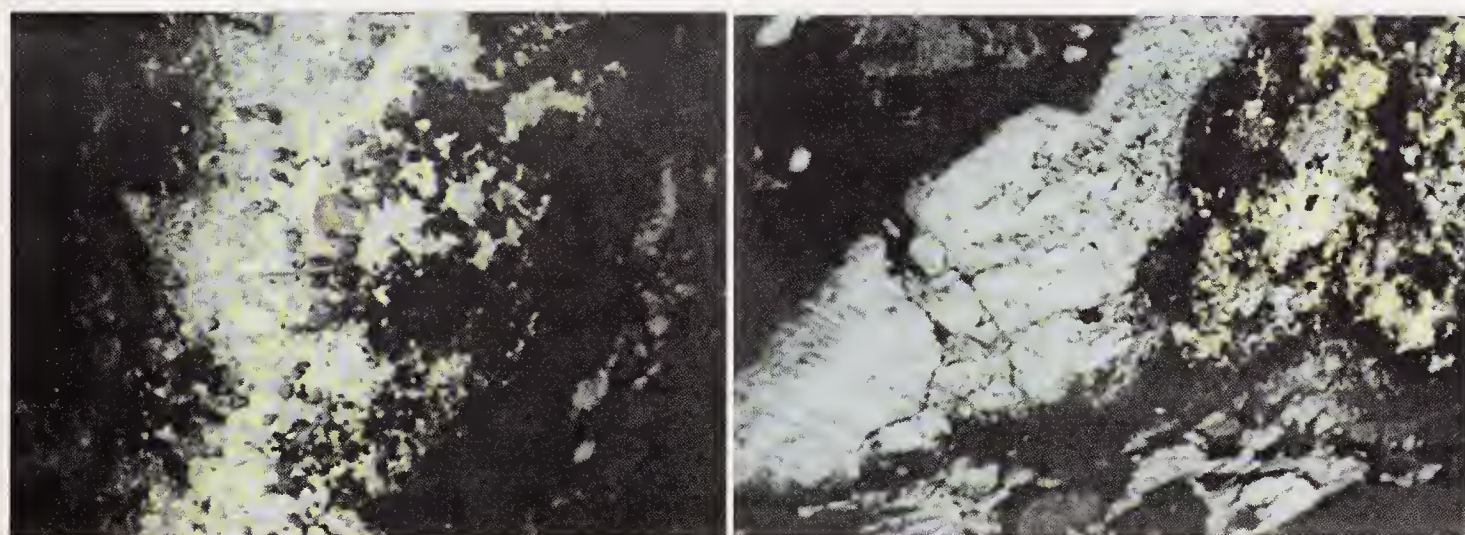
Discussion

Stereo-microphotograph of the iron nail shows dark brown rusted portions, having soil and geological deposits at places. A crack on one side of the object developed probably due to physical stress of the burial environment. There are fiber deposits and crystalline quartzite structures on the nail surface which could be a constituent of the slag composition or may equally be attributed to the surrounding sources.

(iii) Metallographic studies (Pl. LX, a, b, c and d)

Discussion

The cutting of the iron nail, while mounting for metallographic examination, revealed that the metal core was marginalized at the very central area of the nail, surrounded by the corroded material. The microstructure showing the non-corroded core in the unetched sample is visible as a solid white metal core at the centre running through the sample. The metal core is surrounded by dark colored highly corroded products of the metal. Intermittent inclusions of the foreign material are also evident in the microstructure in the unetched sample. The slag content is not prominent, the veined grey area intruding into the metal core of the nail are scale and corrosion products that can be seen to be the red-brown corroded iron all around the outer boundaries. Remnants of metallic grains in mass of corrosion are visible in the outer corroded area. In the area of the non-corroded metal core, some inclusions of foreign/phases of iron have been noticed. No further features are visible in the unetched condition.

The nail was etched in Nital. The etching does not reveal any further features such as dendrite formation, which occurs on casting and slow cooling of the metal. The fibrous morphology caused by heavy hammering, or slip lines are not distinguishable. The structure of the corrosion here does not reveal any pseudomorphic preservation of the structure of the iron.

a b

c d

Pl. LX Iron nail: Microphotographs: a, before etching; b, after etching; c, after etching; and d, after prolonged etching.

(iv) Scanning Electron Microscopy with EDAX (Pl. LXI and Figs. 52 and 53)

The nail was subjected to area analysis at two different places, one the core metal area and the other corroded proportion of the nail.

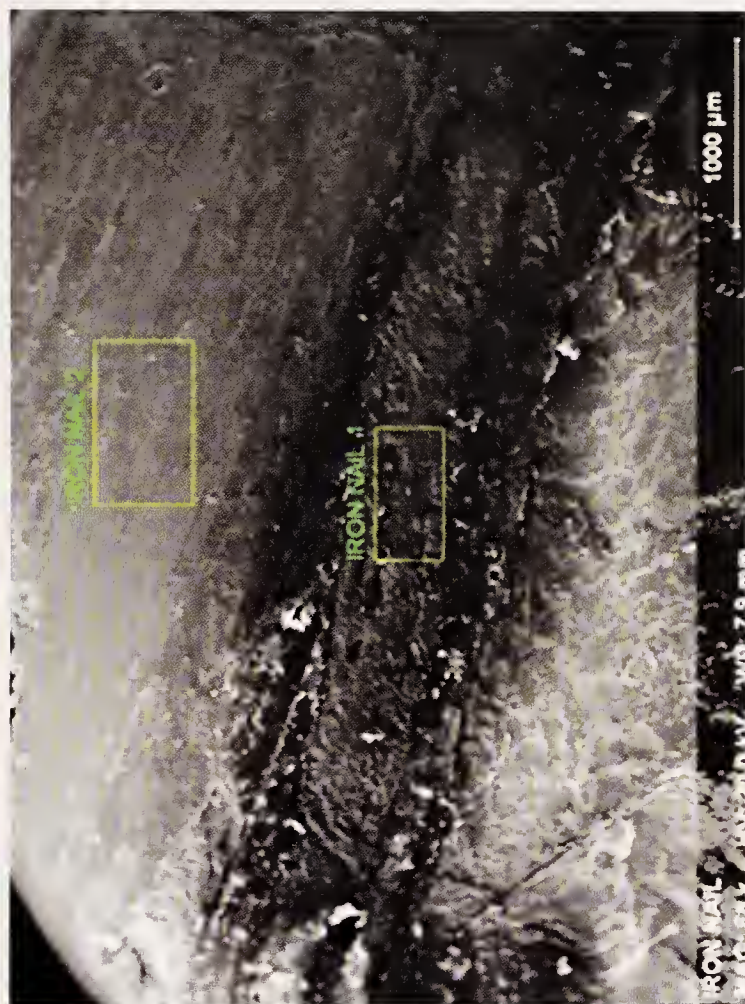
The elemental and oxides composition of the Iron Nail Metal Core

Element	Series	unn. [wt.-%]	C norm. [wt.-%]	C Atom. [at.-%]	C Oxide	Oxid. C [wt.-%]
Silicon	K-series	0.28	0.28	0.34	SiO_2	0.58
Chlorine	K-series	0.55	0.56	0.53	Cl	0.54
Iron	K-series	70.15	72.46	43.52	Fe_2O_3	98.50
Calcium	K-series	0.24	0.25	0.21	CaO	0.33
Aluminium	K-series	0.03	0.03	0.04	Al_2O_3	0.06
Oxygen	K-series	25.57	26.41	55.37	O	-4.92
	Total:	96.81	100.00	100.00		

The elemental and oxides composition of the Iron Nail Corroded Metal

Element	Series	unn. [wt.-%]	C norm. [wt.-%]	C Atom. [at.-%]	C Oxide	Oxid. C [wt.-%]
Silicon	K-series	0.02	0.02	0.03	SiO_2	0.03
Phosphorus	K-series	0.18	0.19	0.28	P_2O_5	0.32
Chlorine	K-series	0.08	0.08	0.11	Cl	0.06
Iron	K-series	88.61	92.54	78.37	Fe_2O_3	99.59
Oxygen	K-series	6.87	7.17	21.21	O	-24.73
	Total:	95.75	100.00	100.00		

Discussion

The SEM EDX studies reveal iron as the major constituent, the metal core having iron oxide content more than 70% while the corroded metal having iron oxide content of more than 95%. The presence of calcium and silicon in the metal core is indicative of usage of limestone wed during the manufacturing of iron nail. Presence of phosphorous in the metal core is not detected.

Pl. LXI Iron Nail - Image Size : 1000 X 750 Mag 66 X HV: 20.0 kV.

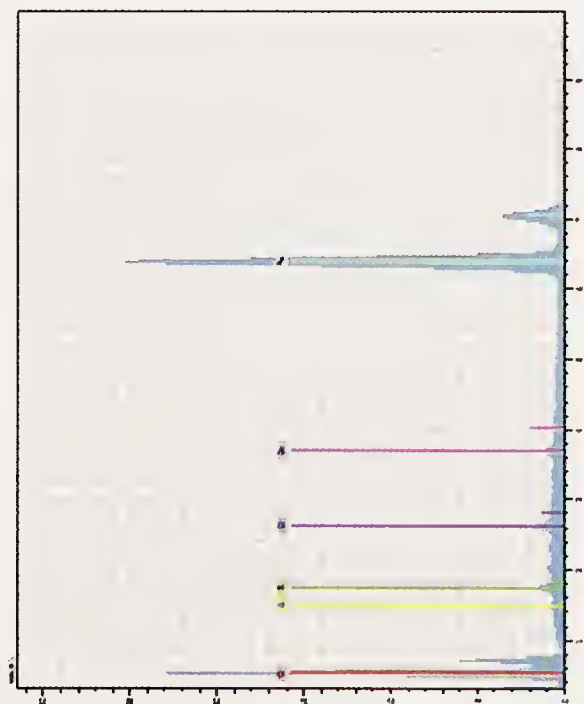



Fig. 52 Spectrum: Iron nail, Metal core.

Fig. 53 Spectrum: Iron nail, Corroded metal.

However, in the corroded part of the nail the presence of calcium is not detected, while the silicon percentage has reduced. Phosphorous is 0.19% which may be attributed to the phosphorous present in the surrounding environment. The presence of phosphorous in the metal core would have prevented the corrosion of the core.

(v) X Ray Diffraction Investigations (Fig. 54)

The results of X Ray diffraction analysis are tabulated below:

Compound Name	Displ. [°2TH]	Scale Fac.	Chem.
Quartz low, dauphin	0.234	0.789	SiO_2
Biotite 2\ITM\RG#1	-0.052	0.480	K.78 Na. 22 Mg1.63
Selwynite	-0.095	0.376	Na K Zr2 Be A1

Discussion

The XRD studies reveal the presence of silicon oxide and aluminum. However, the major constituent iron was not detected as iron may be attributed to be in the amorphous form which is not detected by XRD Analysis.

(vi) Inductively Coupled Plasma Mass Spectrometry (ICP-MS) Analysis

Element	Iron Nail
Fe	42.9%
Cu	82
Ni	63
Ag	7
Mn	245
As	26
Zn	196
Pb	6

All values in PPM except those indicated in weight percent.

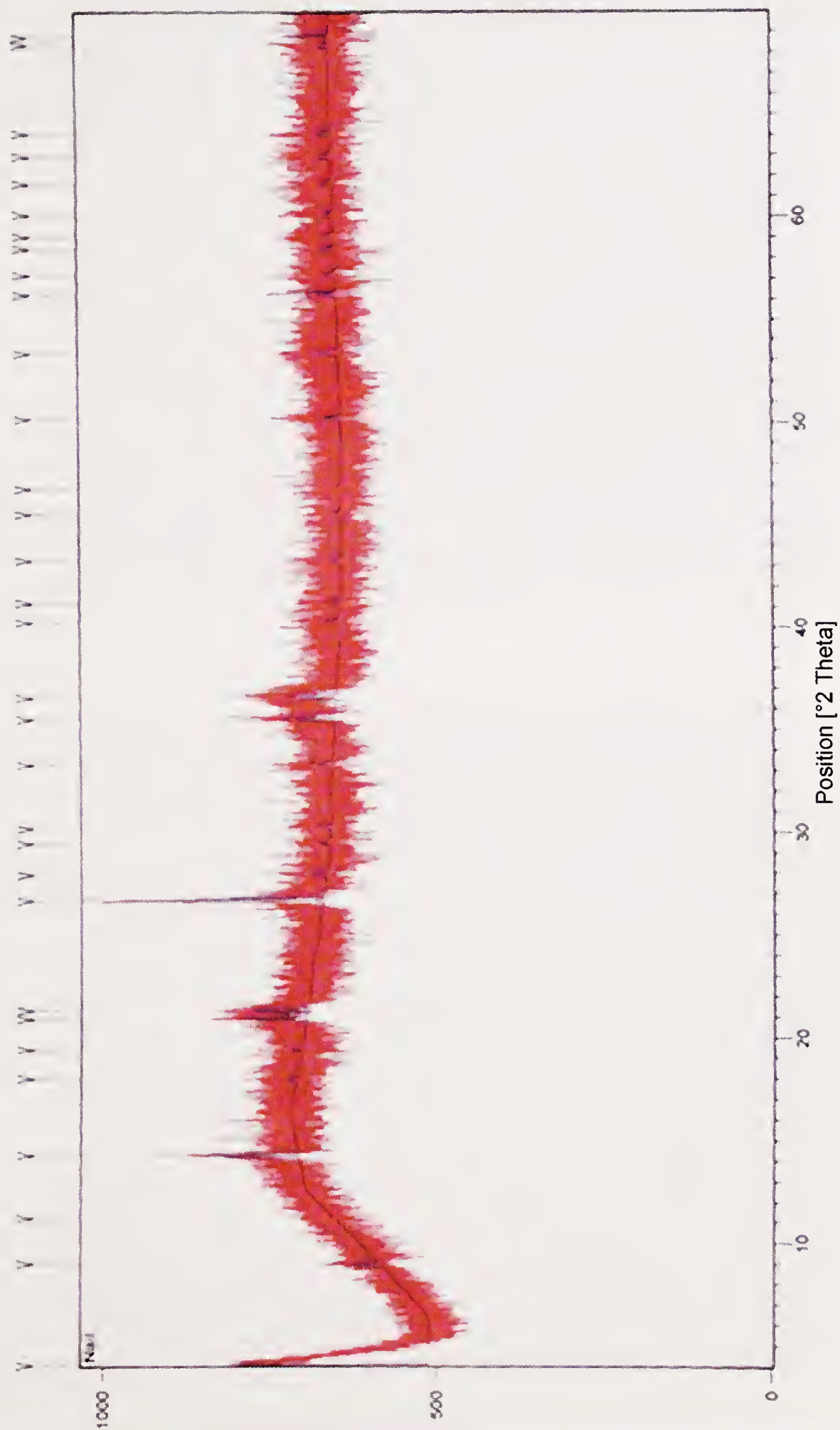



Fig. 54

Discussion

The ICPMS analysis of the metal sample reveals iron as a major constituent, with zinc and manganese as main additives. However the presence of phosphorous is lower than the traceable limits.

2. Scientific investigations of Iron Slag

(Sl. No. 2; Reg. No. 67)

(i) Physical observation

The Iron slag appears to have extensive corrosion of the metal surface, the corrosion products having been re-deposited on the external surface unevenly. The metal surface appears rough and pitted-reddish brown in colour. The metal core is generally not distinguishable, which is indicative of major loss of core metal (Pl. LXII).

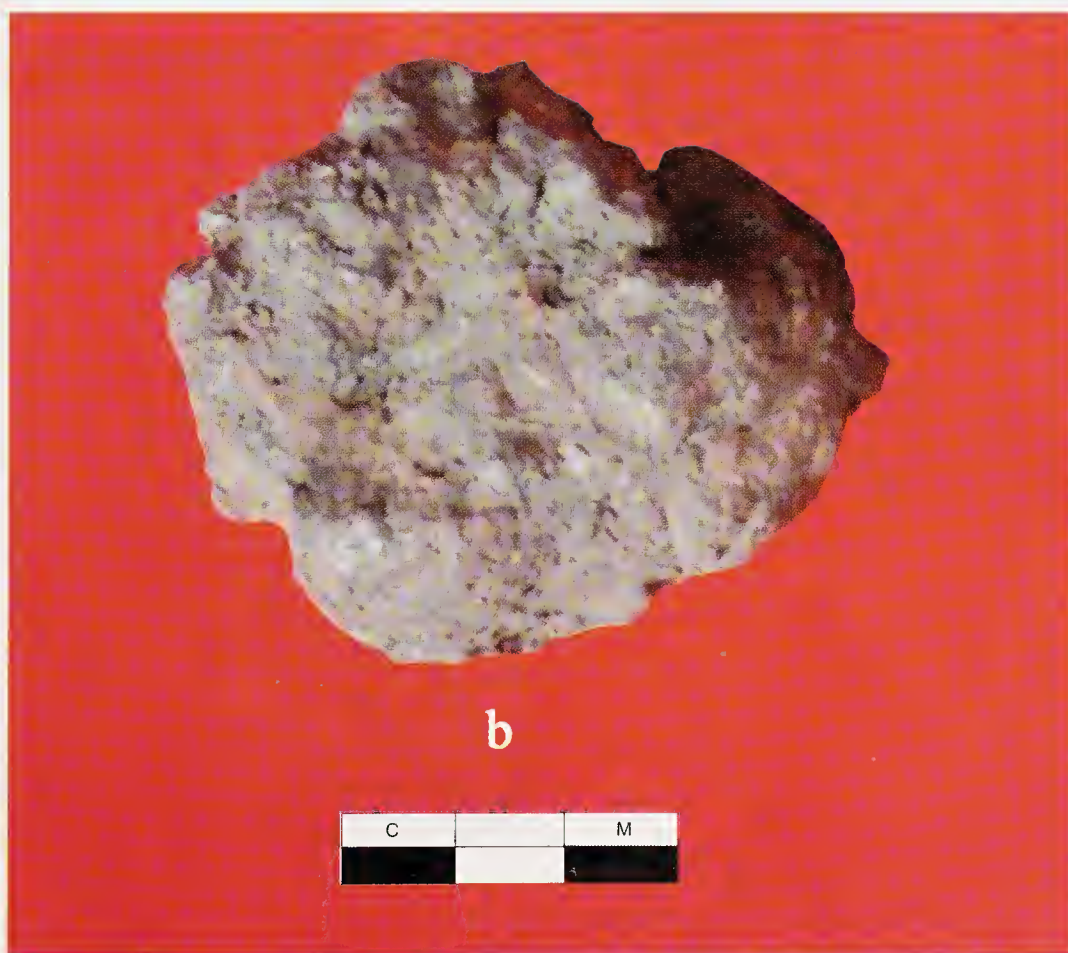
(ii) Stereomicroscopy (Pl. LXIII)

Discussion

The general view of the slag under Stereomicroscope shows pits at places, which is attributable to the removal of geological crystals or metal grains. The surface also shows crystals and corroded metal remains at places. Non-corroded metal portion trapped in the slag composition is also visible. The other side of the slag having rough and corroded surface with rounded pits is probably due to gaseous phases leaving the surface at high temperature creating such pits. The slag surface also shows extraneous deposits such as fibers, soil lumps and silica particles.

(iii) Metallographic studies (Pl. LXIV)

Discussion

The microstructure of the un-etched slag sample has revealed the presence of dendritetic structures (in both well developed and primitive stage). The sharp edged crystalline structures could be due to the geological inclusions like compounds of calcium, magnesium, quartz, etc., which are also supported by the instrumental analysis of the sample. The dark black coloured spots are indicative of the corrosion products of metal.

Pl. LXII Two views of Iron slag: a, front; and b, back

Pl. LXIII Three views under Stereo Microphotograph : a, general view, b and c, close-up views showing surface deposits and features.

The microstructures captured in different areas of the slag sample have shown the following characteristics:

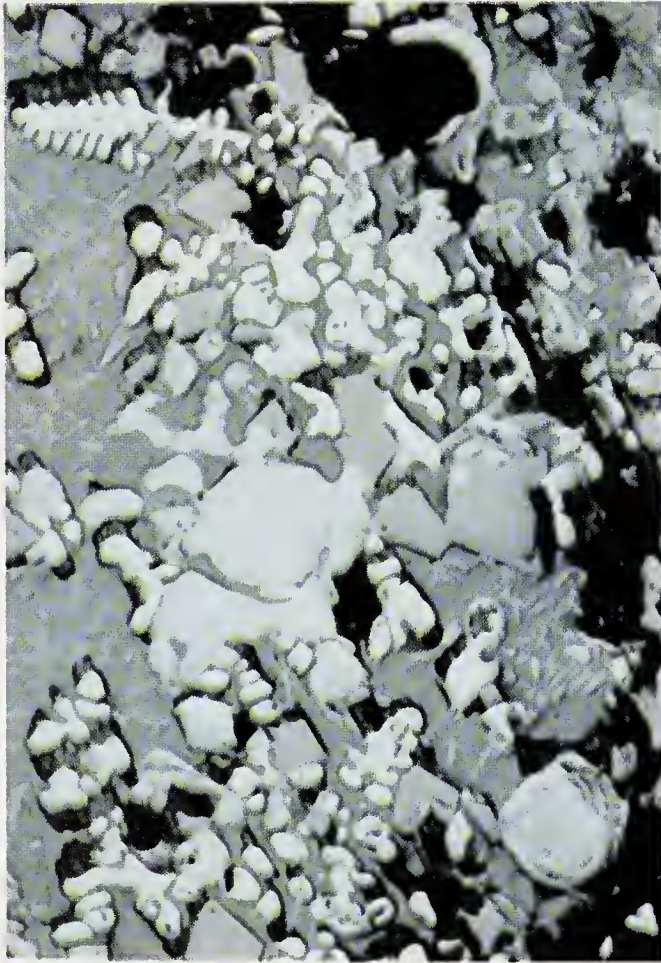
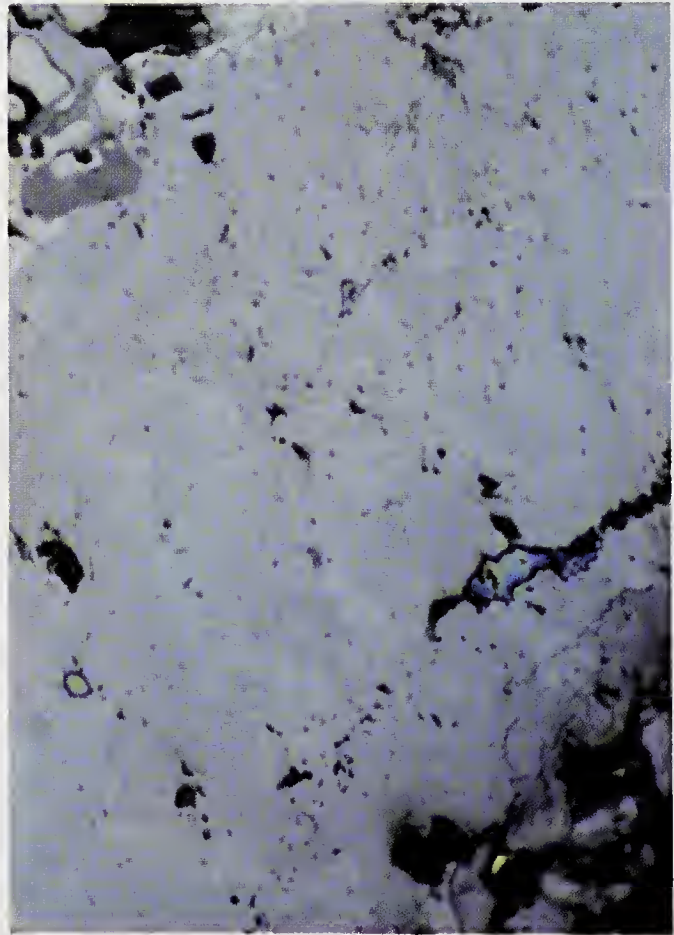
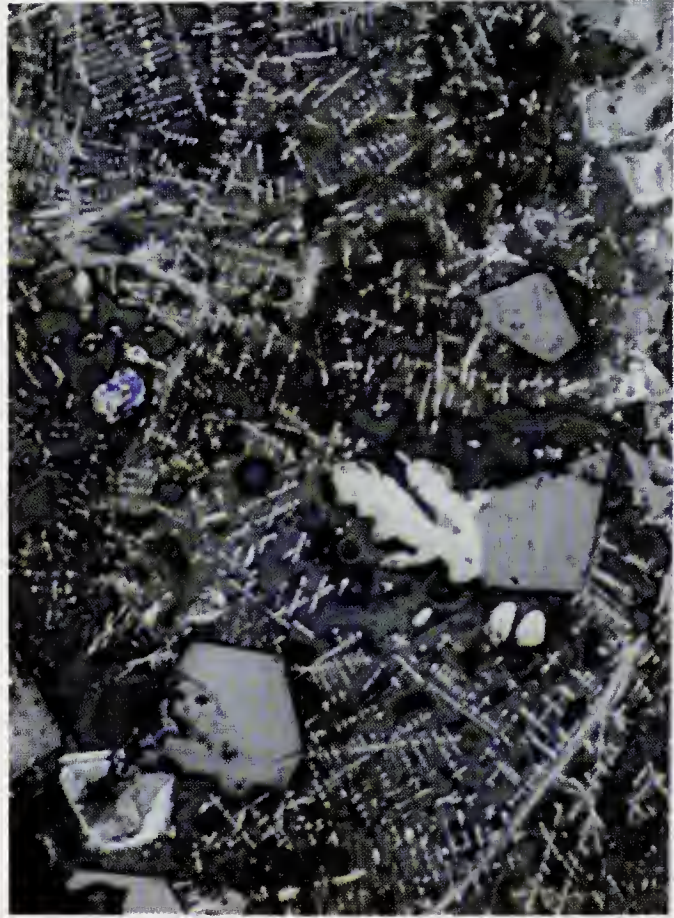
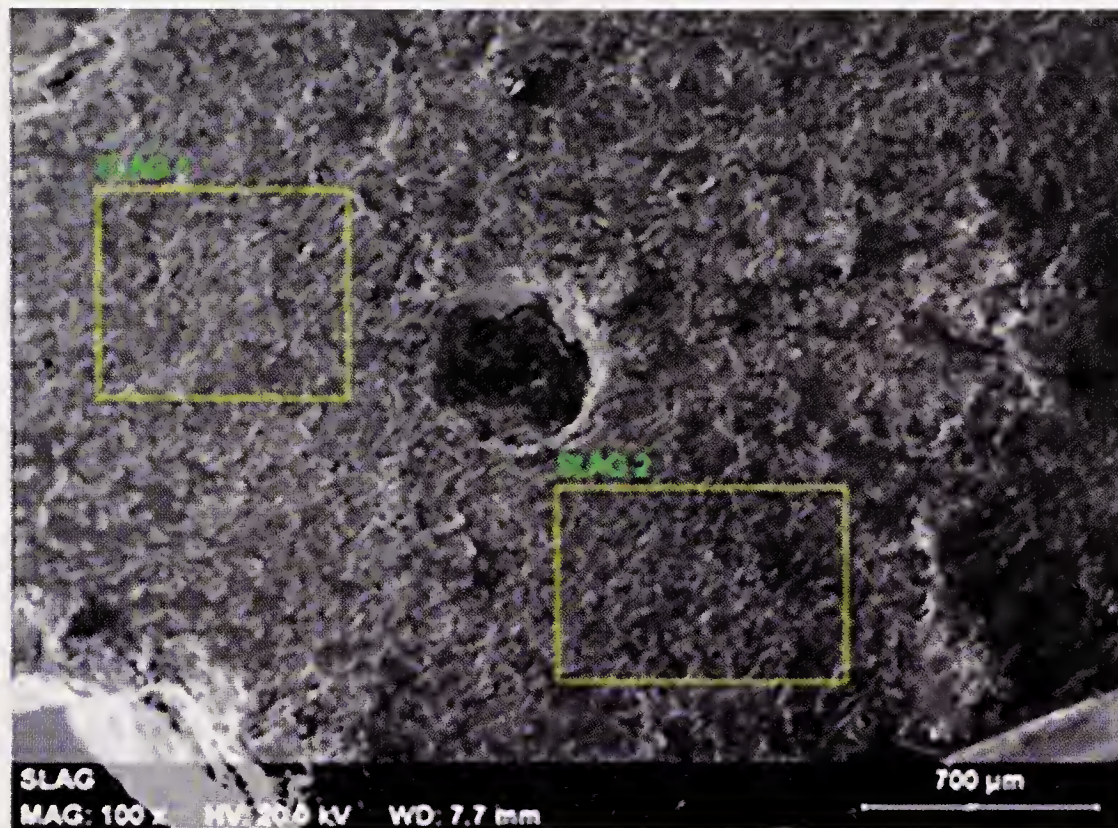
- A lump of quartz in the form of the fused silica with a few scattered and coloured pits, formed due to etching of metallic portions is visible.
- The microstructure of the etched slag sample also reveals the presence of dendrite-tic structures (in both well developed and primitive stage) with certain geological inclusions.
- The metal grains representing different phases and surrounded by corrosion products in dark brown colour are also visible.

The segregation of various phases of the iron in the form of dendrite-tic structure surrounded by the alloy materials perhaps due to slow cooling of the slag. The presence of the slag globules is indicative of metal being wrought iron.

(iv) Scanning Electron Microscopy – EDAX (Pl. LXV and Fig. 55)

Scanning electron Microscopy coupled with energy Dispersive X ray System provides an effective means of obtaining quantitative information of the distribution and composition of the metal sample. The metal slag was subjected to area analysis at two different places of the metal slag.

The elemental and oxides composition of the Iron Slag

Element	Series	unn. [wt.-%]	C norm. [wt.-%]	C Atom. [at.-%]	C Oxide	Oxid. C [wt.-%]
Magnesium	K-series	1.27	1.29	1.65	MgO	1.73
Aluminium	K-series	7.28	7.41	8.54	Al_2O_3	11.32
Silicon	K-series	9.83	10.02	11.08	SiO_2	17.32
Phosphorus	K-series	1.78	1.81	1.82	P_2O_5	3.35
Potassium	K-series	2.22	2.27	1.80	K_2O	2.21
Calcium	K-series	8.97	9.14	7.08	CaO	10.33
Titanium	K-series	0.87	0.88	0.57	TiO_2	1.19
Iron	K-series	44.67	45.49	25.31	Fe_2O_3	52.55
Oxygen	K-series	21.31	21.70	42.14	O	-19.19
	Total	98.20	100.00	100.00		

Pl. LXIV Iron slag : Microphotographs, a, before etching; b and c, after etching.

Pl. LXV Iron slag :Image size : 1000 x 750 Mag : 100 x HV : 20.0kV.

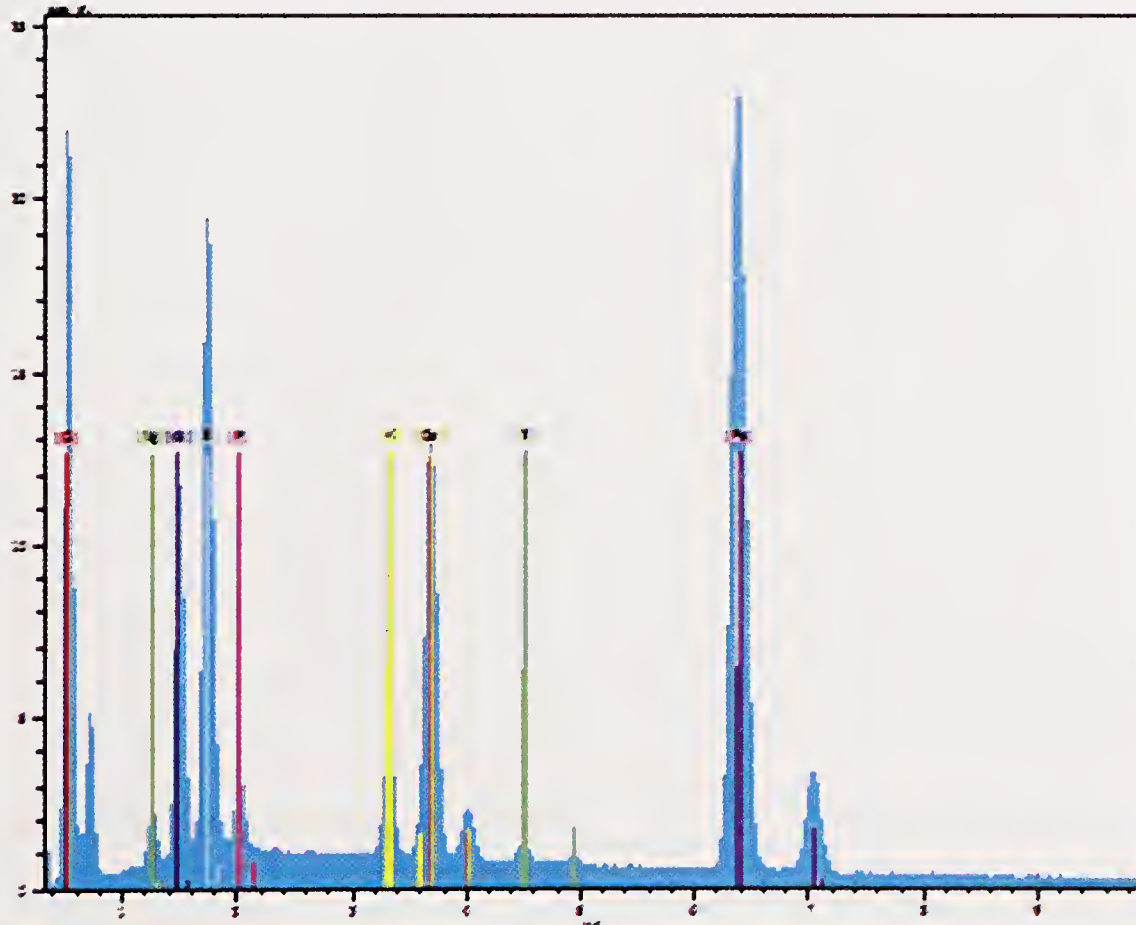



Fig. 55 Spectrum : Iron slag.

Discussion

The SEM EDX studies reveal iron as the major constituent the metal core having iron content approximately 45% while iron as oxide content 52%. The presence of calcium oxide, aluminum oxide and silicon oxide more than 7% in the metal slag is indicative of usage of limestone wed during the manufacturing. The presence of more than 1% phosphorous in the metal slag appears to be additive constituent/impurities.

(v) X Ray Diffraction Studies (Fig. 56)

The results of X Ray diffraction analysis are tabulated below:

Compound Name	Displ. [°2TH]	Scale Fac.	Chem.
Biotite 2\ITM\RG#1	-0.144	0.718	K.78 Na. 22 Mg1.63
Nitratine, syn	-0.112	0.008	Na N O_3
Ringwoodite (MG)	-0.249	0.094	Mg_2 Si O_4

Discussion

The XRD studies reveal the presence of silicon oxide and aluminum. However, the major constituent iron was not detected as the iron may be attributed to be in the amorphous form. XRD Analysis results in detection of crystalline forms only.

(vi) Inductively Coupled Plasma Mass Spectrometry (ICP-MS) Analysis

Element	Iron Slag
Fe	50.6%
Cu	324
Ni	475
Ag	2
Mn	55
As	84
Zn	30
Pb	10

All values in PPM except those indicated in weight percent.

Note :

- The analytical data was produced against calibration preformed using certified international reference standard.
- Maximum permissible error is ~2.5% relative.

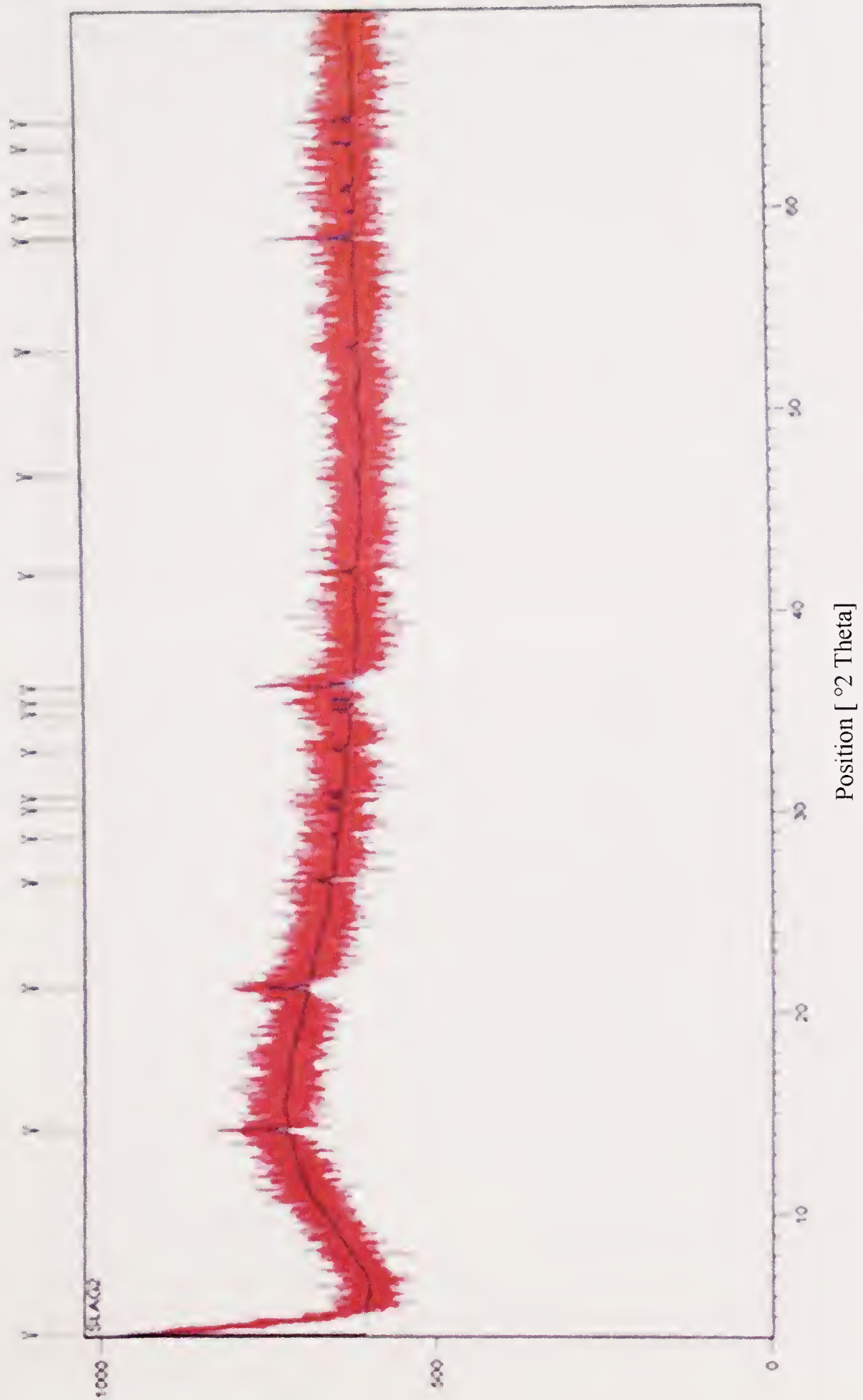



Fig. 56

Discussion

The ICPMS analysis of the metal sample reveals iron as a major constituent, with copper, nickel as main additives and zinc and manganese as impurities however the presence of phosphorous lower than the traceable limits. Arsenic in traces may have been added deliberately or could be an impurity.

3. Scientific investigations of the copper specimen

(Sl. No. 3; Reg. No. 178)

(i) Physical observation

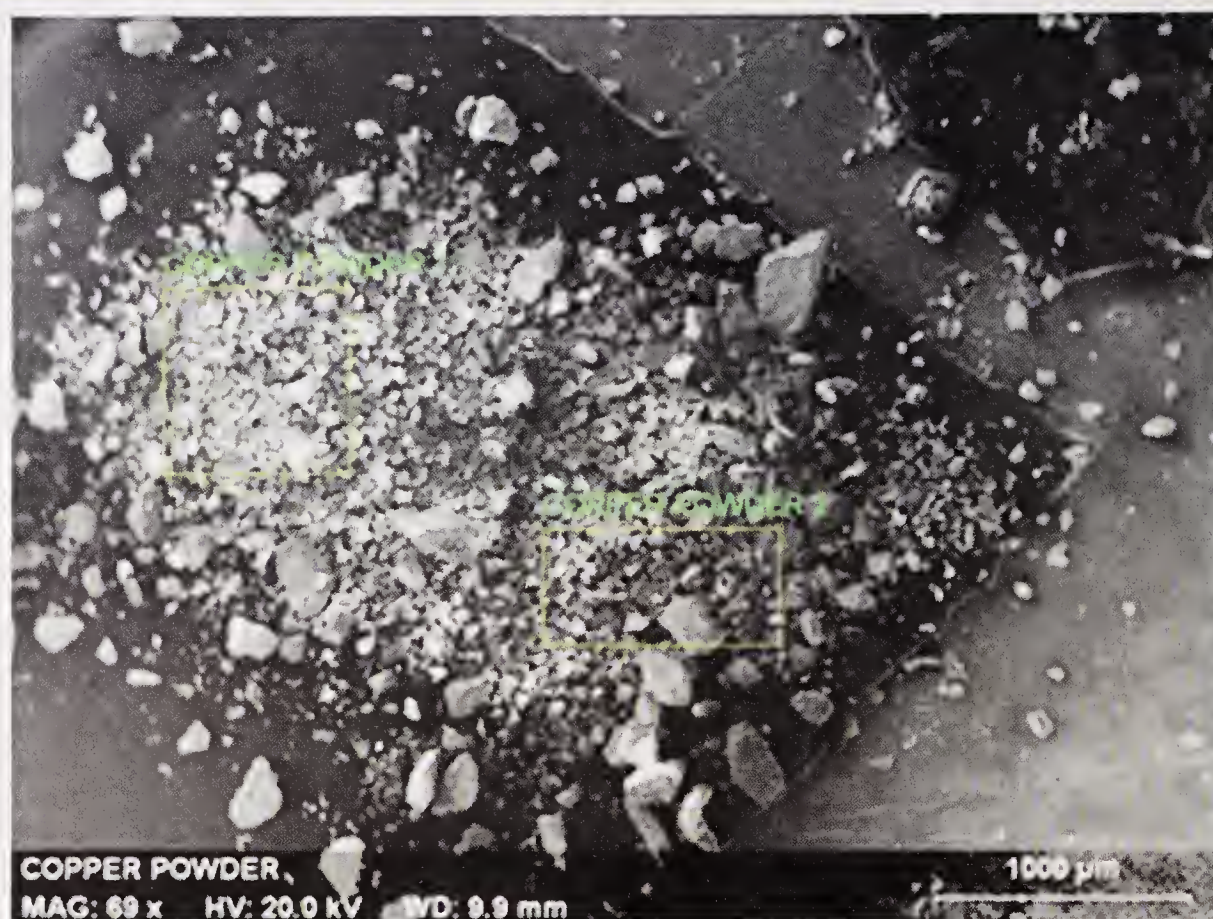
The copper metal appears to have corrosion product on the metal surface. The corrosion products have redeposited on the external surface unevenly in pits. The metal surface appears rough and pitted, greenish blue in colour due to corrosion. The core appears to be of metal (Pl. LXVI).

(ii) SEM-EDAX Analysis

Scanning Electron Microscopy coupled with Energy Dispersive X ray System provides an effective means of obtaining quantitative information of the distribution and composition of the metal sample. The metal sample was subjected to area analysis at two different places of the powdered metal sample (Pls. LXVII and LXVIII and Figs. 57 and 58).

The elemental and oxides composition of the Copper Sample

Element	Series	unn. [wt.-%]	C norm. [wt.-%]	C Atom. [at.-%]	C Oxide	Oxid. C [wt.-%]
Magnesium	K-series	0.39	0.38	0.60	MgO	0.66
Aluminium	K-series	0.83	0.82	1.16	Al_2O_3	1.62
Silicon	K-series	4.01	3.99	5.41	SiO_2	8.87
Phosphorus	K-series	0.01	0.01	0.01	P_2O_5	0.02
Sulfur	K-series	0.13	0.13	0.15	SO_3	0.34
Chlorine	K-series	0.32	0.32	0.34	Cl	0.33
Calcium	K-series	0.05	0.05	0.05	CaO	0.08
Iron	K-series	0.94	0.94	0.64	Fe_2O_3	1.39
Tin	L-series	19.15	19.03	6.11	Sn	19.80
Copper	K-series	51.69	51.37	30.82	CuO	66.90
Oxygen	K-series	23.10	22.96	54.70	O	4.02
	Total:	100.61	100.00	100.00		

Pl. LXVI Two views of copper specimen: a, front; and b, back.

Pl. LXVII Copper specimen : Image size : 1000 x 750 Mag : 69 x HV : 20.0kV.

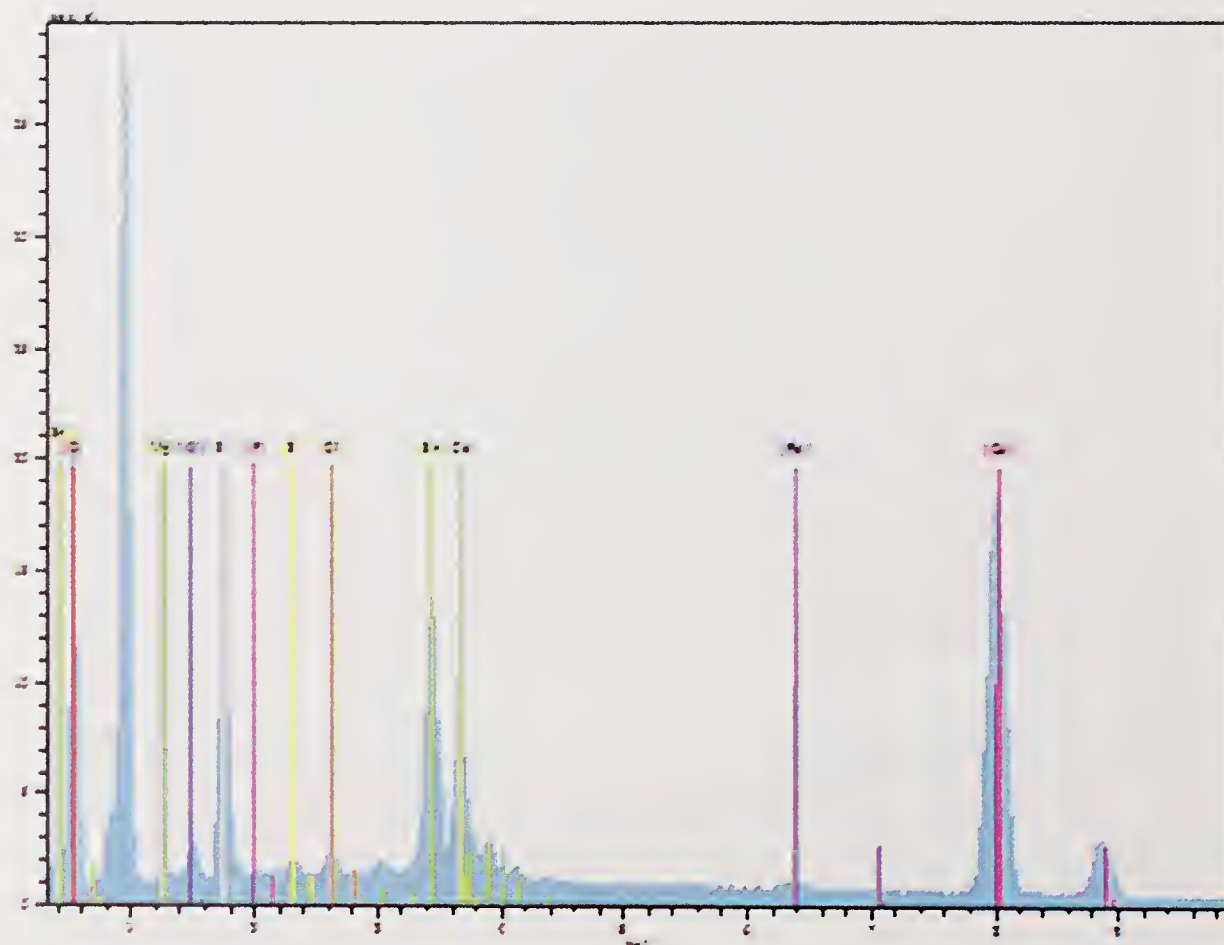
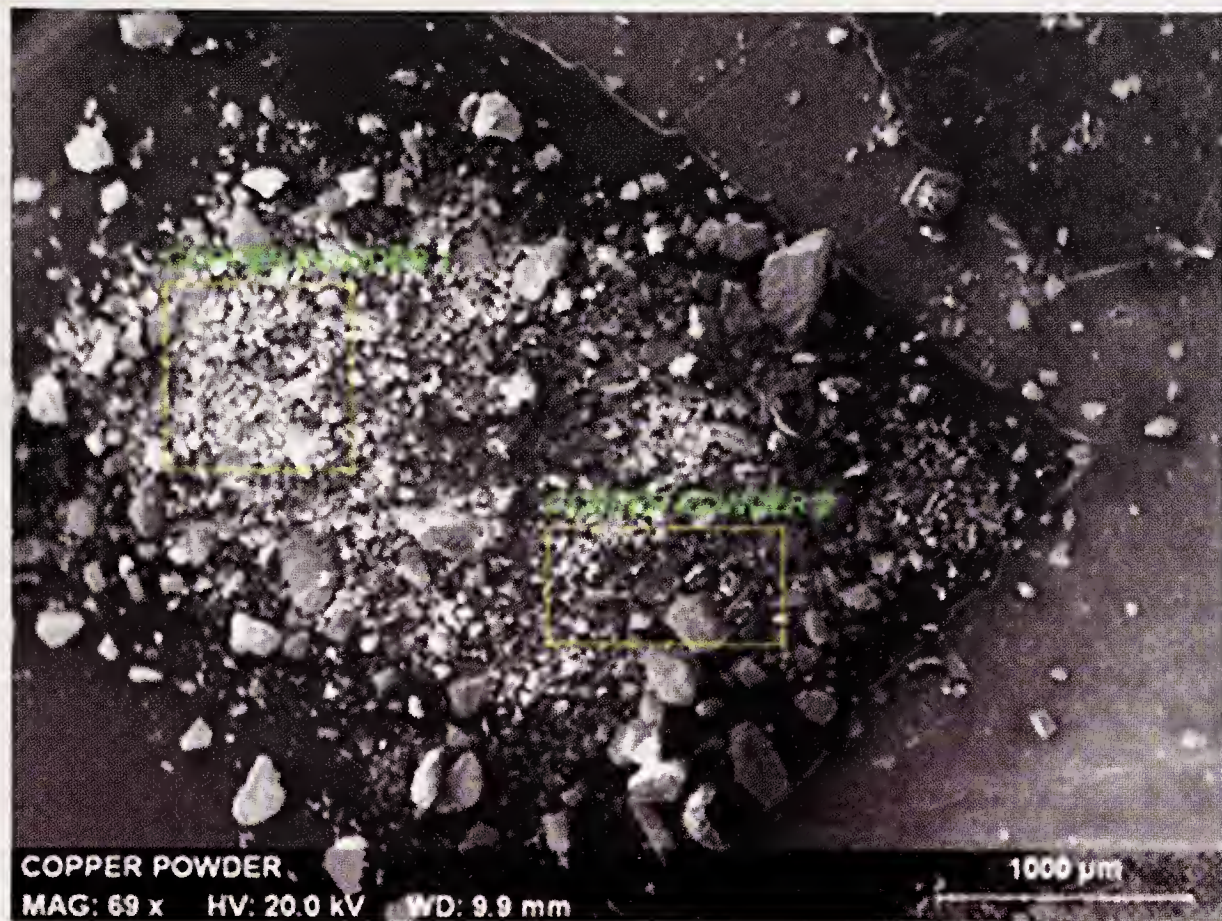



Fig. 57 Spectrum : Copper sample.

Pl. LXVIII Copper powder :Image view

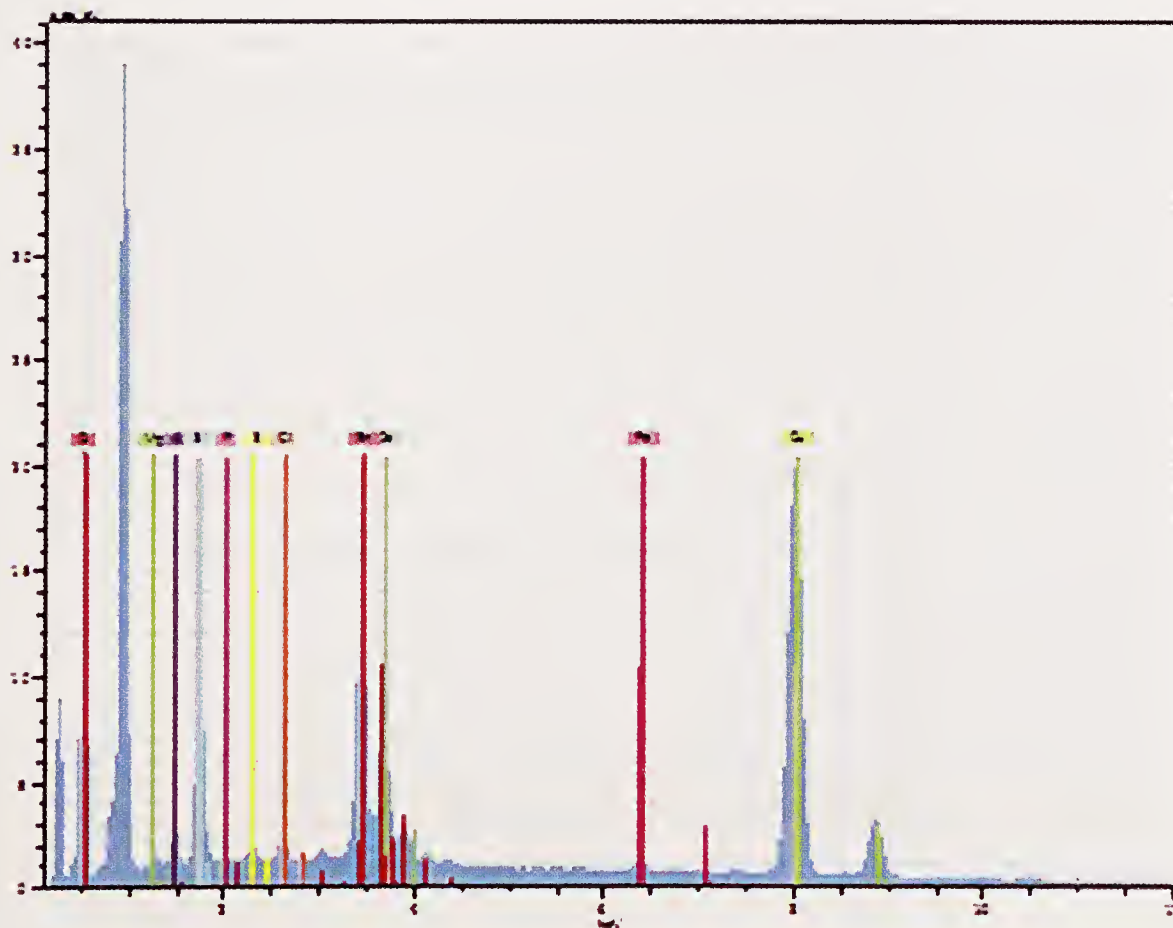



Fig. 58 Spectrum : Copper powder

Element	Series	unn. [wt.-%]	C norm. [wt.-%]	C Atom. [at.-%]	C Oxide	Oxid. C [wt.-%]
Magnesium	K-series	0.11	0.11	0.19	MgO	0.19
Aluminium	K-series	0.48	0.48	0.70	Al_2O_3	0.92
Silicon	K-series	3.20	3.22	4.50	SiO_2	6.99
Phosphorus	K-series	0.00	0.00	0.00	P_2O_5	0.00
Sulfur	K-series	0.01	0.01	0.01	SO_3	0.02
Chlorine	K-series	0.10	0.10	0.11	Cl	0.10
Calcium	K-series	0.00	0.00	0.00	CaO	0.00
Iron	K-series	0.87	0.87	0.61	Fe_2O_3	1.26
Copper	K-series	59.98	60.31	37.28	CuO	76.62
Tin	L-series	13.61	13.69	4.53	Sn	13.89
Oxygen	K-series	21.09	21.21	52.07	O	1.48
	Total:	99.44	100.00	100.00		

Discussion

The energy Dispersive X-Ray analysis shows that the percentage of copper in this sample is 51%, Tin 19%, silicon 4%, aluminium 0.83%, magnesium 0.39%, iron 0.94%. As the copper contained is less while oxygen percentage 23% it means that the sample is severely attacked by corrosion. The presence of iron along with sulfur suggest the use of sulphide ores it also hints at lack of thorough and prolonged melting process sulfur, chlorine, phosphorus, magnesium, aluminium are present as trace elements.

(iii) X Ray Diffraction Investigations (Fig. 59)

The diffraction pattern of the sample reveals that

- Cuprous oxide ;
- Cassiterite an important ore of tin
- Quartz may be from the alluvial secondary deposit from which cassiterite originated

are present in the sample.

The XRD results are tabulated below:

Compound Name	Displ. [°2TH]	Scale Fac.	Chem.
Cuprite, syn	-0.111	0.925	Cu_2O 62%
Quartz low	-0.052	0.186	SiO_2 30%
Cassiterite, syn	-0.111	0.065	SnO_2 8%

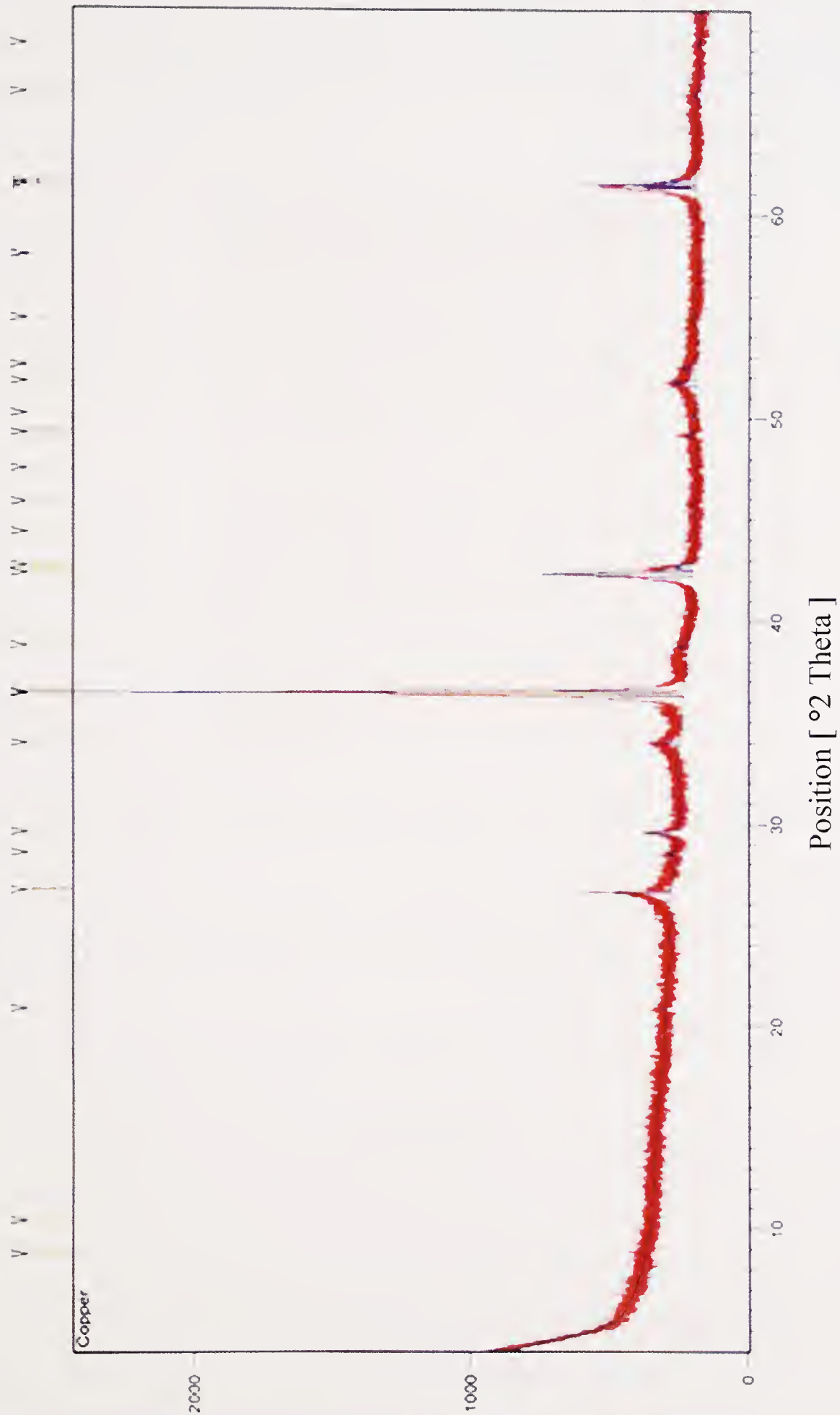



Fig. 59

(iv) Inductively Coupled Plasma Mass Spectrometry (ICP-MS) Analysis

The presence of lead, manganese, nickel as major trace elements has been detected, the major constituent being copper.

Element	Iron Slag
Fe	0.36%
Cu	29.6%
Ni	598
Ag	58
Mn	23
As	670
Zn	76
Pb	698

All values in PPM except those indicated in weight percent.

Note :

- The analytical data was produced against calibration preformed using certified international reference standard.
- Maximum permissible error is ~2.5% relative.

4. Conclusion

(i) Iron Nail

The Metallographic study of the iron nail while sample cutting reveals upon visual observations, that the metal core had been extensively replaced with the corrosion products. The remnants of the core metal have been reduced to the central region surrounded on all sides with the corrosion products.

The central metal core examination is insufficient to enable identification on the technique of manufacture of the nail as the dendrite, fibrous or sharp grain structures are not distinguishable in the microphotograph.

The XRD result does not indicate iron content, as the crystalline form of iron is not detectable which may be attributed to its extensive corrosion and amorphous state of the iron metal.

The ICPMS analysis indicates iron content as major element with zinc and manganese as additives and copper, nickel, arsenic as major trace impurities or which may be deliberate additive, while silver and lead as trace impurities.

The non detection of carbon on elemental as well as mineralogical analysis and also presence of a uniform central core is suggestive of the metal to be wrought iron. Further identification of working of the metal nail could not be made as the nail is extensively corroded leaving no evidence of its working to be observed on microscopic examination.

(ii) Iron Slag

The Metallographic studies of the iron slag reveals upon visual observations that the sample is an alloy with the corrosion products and inclusions. The XRD result does not indicate iron content, as the crystalline form of iron is not detectable which may be attributed to its extensive corrosion and amorphous state of the iron metal.

The ICPMS analysis indicates iron content as major element with copper, nickel as main additives and zinc and manganese as impurities. However, the presence of phosphorous is lower than the traceable limits. Arsenic in traces may have been added deliberately or could be an impurity. The silicon, arsenic, phosphorous presence may be attributed to the burial soil environment.

The slow cooling of the slag resulted in the segregation of the various phases of the iron in the form of dendrite-tic structure surrounded by the alloy materials. The presence of the slag globules is indicative of metal being wrought iron.

(iii) Copper specimen

The metal sample may be characterized to be bronze, i.e., a copper and tin alloy, while lead 698 ppm may have been added deliberately in order to make the metal fusible to facilitate casting. The absence of sulfur in the composition indicates that copper was smelted from ores which were thoroughly oxidized. The presence of nickel is advantageous as it increases the hardness of the metal. Silver, manganese and zinc are impurities which might have been drawn in the composition at the time of extraction of metal from ore.

The trace elements may also be attributed to the burial soil environment.

Exploration At Chitrakūṭa

Chapter XII

Introduction

Just like Bharadvāja Āśrama, Chitrakūṭa also figures in the Rāmāyaṇa story (see Fig. 1). After leaving Bharadvāja Āśrama, Rāma, Sītā and Lakṣmaṇa, crossed the Yamunā and reached Chitrakūṭa where they stayed for quite some time. It was here that Bharata, a younger brother of Rāma, came to persuade him to return to Ayodhyā. Rāma, however, did not accept the request of Bharata and sent him back to Ayodhyā to carry on the government on his behalf. It was because of this association of Chitrakūṭa with the Rāmāyaṇa story that an exploration of the site was undertaken, in order to find out if it contained any remains contemporary with the earliest levels of Ayodhyā.

Chitrakūṭa is a small township, a part of which falls in Uttar Pradesh and another in Madhya Pradesh. It is located on the banks of a small but perennial river called the Mandākinī. Close by there is a hillock called Kāmathagiri on which Rāma is said to have had his hut. Pilgrims make a *parikramā* (circumambulation) of this hill. There is also a temple at the foot of the hill, where the pilgrims offer their obeisance.

However, the hub of the activities of the pilgrims is the river Mandākinī and its neighbourhood (Pls. LXIX and LXX). On its left bank there are many temples, mostly assignable to the medieval times. All these structures leave hardly any clear open space where a worthwhile excavation can be carried out. Thus, we had to resort to mere scrapings here and there in the little space that could be found in between the temples.

In spite of all these handicaps, we were delighted to recover from these scrapings potsherds of the early variety of the Northern Black Polished Ware and of the black-slipped

Pl. LXIX Aerial view of Chitrakūṭa township on the banks of the Mandākinī river.

Pl. LXX Chitrakūṭa: View of the ghāṭs and temples on the banks of the Mandākinī river.

Pl. LXXI Heaps of explored pottery from Chitrakūṭa: 1, black-slipped ware; and 2, NBPW.

ware. Similar sherds were also found at odd places within the township itself. All this shows that Chitrakūṭa co-existed with Ayodhyā at the beginning of the first millennium BCE. Hence its featuring in the Rāmāyaṇa story cannot be just dismissed as a figment of imagination.

The Pottery from Chitrakūṭa

As already stated, most of the area at Chitrakūṭa is covered by temples and modern buildings, leaving hardly any place for a worthwhile excavation. However, some pottery could be collected from exposed sections in between these structures, particularly from the area behind the Shankar Temple, located on the bank of the Mandākinī.

The pottery includes tiny pieces of black-slipped ware and Northern Black Polished Ware (NBPW) (Pl. LXXI). Of these, the former was found in a greater quantity in comparison to the latter. In the black-slipped ware mention must be made to few rim fragments of bowls and a basal part of a bowl (Pl. LXXI, 1). The NBPW includes a fragment of a dish. The remaining fragments do not give any definite idea about the shapes, but these appear to be parts of dishes and bowls (PL. LXXI, 2).

The description of the selected specimens is as follows:

Fig. 60 and Pl. LXXII

1. Fragment of the rim of a bowl of black-slipped ware: a groove below the rim on the outside, obliquely convex sides; medium fabric, well fired, greyish core, treated with a black slip. From surface.

2. Fragment of the rim of a bowl of black-slipped ware: externally everted rim, convex sides; medium fabric, well fired, grey core, treated with a black slip. From surface.

3. Fragment of the rim of a dish of NBPW: featureless inturned rim, convex sides; fine fabric, well fired, dark grey core; a fine silvery black slip. From surface.

4. Fragment of the rim of a medium-sized vase of a black ware with remnant of black slip on the exterior of the rim: slightly out-turned collared rim, concave neck; medium fabric, not so well fired, smoky core and smoky surface. From surface.

Fig. 60 Specimens of explored pottery from Chitrakūṭa: 1,2 & 4, black-slipped; and 3, NBPW.

Pl. LXXII Specimens of explored pottery from Chitrakūṭa: 1,2 & 4, black-slipped; and 3, NBPW.

Appendix

A *VIRAHĀ* (BALLAD) DEALING WITH A HUMAN TRAGEDY DURING THE *KUMBHA MELĀ* AT ALLAHABAD IN 1954

विरहा–1, भाग–1, (गंगा जी की स्तुति*)

सुमिरी सूर सती जग तारन, मइया भूलि गइउ केहि कारन मइया दहिने पे होइजा तइयार।

1. पहिले हम गाई गंगा जी के सुमिरनवाँ,
   जउन गंगा मइया दिहिन नान्हे से गियनवाँ।
   जिला है इलाहाबाद तासिल सोरमवाँ,
   थाना है नबाबगंज राम चौरा है मकनवाँ ।।
   जउन गंगा मइया दिहिन नान्हे से गियनवाँ।।
2. उत्तर और पूरब के दुइ बाटइ मोहरवाँ,
   द्वारे पे नारा बाटइ पीपर बा निसनवाँ।
   जउन गंगा मइया दिहिन नान्हे से गियनवाँ।।
3. अउर आगे गंगा जी के तट अहै बाबा के स्थनवा
   सिंगरौर देवी के धाम मेला लगइ कररवा।
   जउन गंगा मइया दिहिन नान्हे से गियनवाँ।

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* the Hindi spellings are as per pronunciation of *virahā* singer.

विरहा– 1, भाग–2, (कुम्भ का कथन)

करूँ कुम्भ का कथन सन् रहा 1954 माघ मेलवा में आवाबा तुफनवा करावइ स्ननवाँ चली।।

1. हुआ पहिले से शोर मेला होगा बड़ा जोर
   इसीसे पहिले से किहिन इन्तजमवॉ ना।।
   पुलिस मलेटरी मंगवाई सड़क की दूकानें हटवाई,
   खाई खंदक् कइलेन सड़क के समनवॉ ना।।
   पुल तो जघे–जघे बनवाई, टीका हैजे के लगवाई
   गाड़ी छूटलि अहै जनता मेल तुफनवॉ ना।।
   जमुना अरइल जी के पास जहाज का अड्डा बना है खास
   वहां पे उतरइ लागे आइ के वायुयनवा ना।।
   झूसी, बदरा, दारागंज, अलोपी, बैरहना एक रंग,
   अरइल, कीट गंज ना खाली मैदनवा।।
   करावइ स्ननवॉ चली।।

2. डेरा तम्बू गवा है लाग दशा गई वहाँ की जाग
   अइसा कभउ न भवा प्राग में नहनवा ना।।
   जब की तीन फरवरी आई दिनवा बुद्ध का रहा भाई
   लोगये करइ चले कुम्भ स्ननवॉ ना।।
   बांध के नीचे गड्ढा भूखा मनई खाई–खाई के सूखा
   कितने मरिगे नर औ नारी बूढ़ जवनवॉ ना।।
   इधर से चला जोर से मेला उधर से लौटा सधुवन का रेला
   इसी से बॉध के नीचे मचिगा घमसनवॉ ना।।
   अंधा मगता लंगड़ा लूल गया सब का मांगना भूल
   बचे एक नहीं जम लोक का किहेन पयनवां ना।।
   रेली रेला में गिर जाते उनको कोई नहीं उठवाते
   हड्डी टूट–टूट के होई गइन पिसनवा।।
   करावइ असननवॉ चली।।

3. घर के कितने नर औ नारी बच्चा लिए गोद महतारी,
   देखा पल भर में दिहेन जान गबनवां ना
   तब से हुकुम भवा सरकारी पहुंची जाई मलेटरी लारी
   सब के भर के भेजै कोतवाली दरम्यनवा ना
   लास की ढेर लगवाई जूता कपड़ा लिहेसि मंगवाई,
   बर्तन हुवाँ पे गजिगा जैसे लाग दुकनवाँ ना।।
   लास की फोटो खिचवाई घायल अस्पताल भिजवाई
   भूले भटको का किहेसि ऐलनवा ना।।
   कहते राम अधार ललकारी यह सब सारद की बलिहारी
   करावइ स्ननवां चली।।

ARCHAEOLOGICAL SURVEY OF INDIA